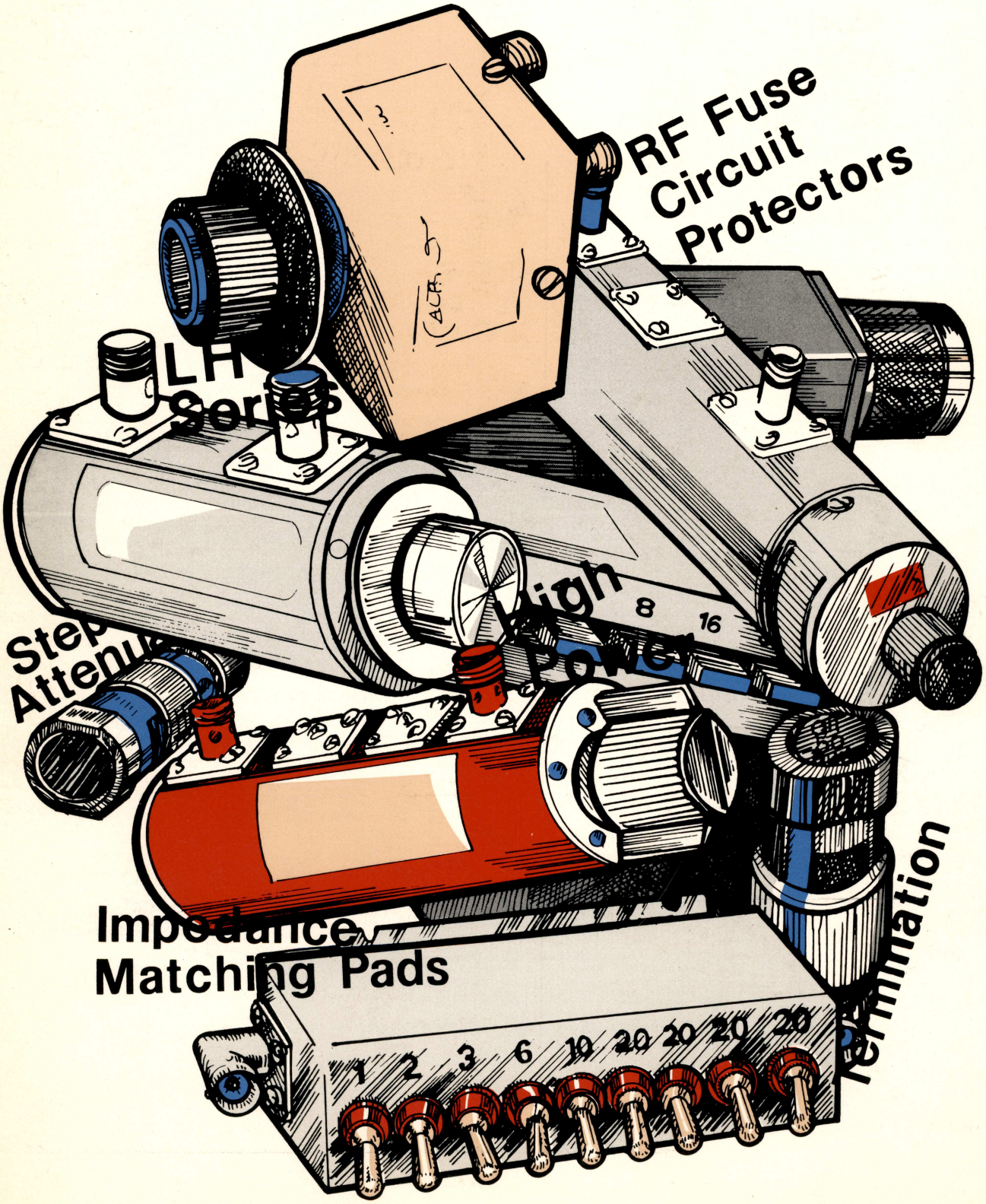
Alan



Microwave Products Catalog No.77-8

GENERAL INFORMATION:
Since 1971, ALAN has been an innovator of R F Passive Components which are rugged, reliable and accurate devices appearing in many programs for commercial and military applications.

ALAN offers a line of components unequaled in the industry with an infinite variety of special components being built for unique specifications and applications. We know that we can help with your particular needs and requirements.

ORDERING INFORMATION:
Please specify the appropriate ALAN Model Number as well as the name and description of the component when ordering. Many optional configurations are possible as are a wide choice of connector types. Customers should specify both connector type and sex required.

Address all orders and correspondence to

ALAN INDUSTRIES,INC.
P. O. Box 1203
Columbus, Indiana 47201

Telephone No.: 812-372-8869

or please refer to the inside back cover for our complete sales representative listing. Purchase orders are accepted via phone; subject to confirmation by your standard purchase order form.

Final acceptance of orders are made only by ALAN, with a $25.00 order minimum. If your need cannot be met by a standard device; please contact our representative, or us regarding your particular application.

TERMS AND CONDITIONS:
Sales are subject to 2% 10 days, Net 30 from date of invoice; F.O.B. Columbus, Indiana, unless agreed to otherwise in writing.

We reserve the right to ship C.O.D. or upon receipt of payment in advance, if credit has not been established.

Prices are subject to change without prior notice.

SPECIFICATIONS:
With continuous product improvements, ALAN reserves the right to change specifications without prior notice. Published specifications may be verified for accuracy through contact with the factory.

STATE AND LOCAL TAXES:
The buyer agrees to make any necessary reports to the taxing authorities and to pay such taxes direct as ALAN'S offer does not contain any amount for state or local taxes.

QUOTATIONS:
Quantity discount schedules and quotations for special products are available from the factory. All quotations are valid for 60 days unless otherwise specified.

APPLICABLE LAW:
Rights and obligations of all parties shall be governed by the Uniform Commercial Code as enacted by the State of Indiana.

WARRANTY:
ALAN warrants its products for a period of one year from date of shipment to be free from defects caused by faulty material or poor workmanship.

The liability of ALAN under this warranty is limited to replacing, repairing or issuing credit, at its option, for any products which are returned by the purchaser during this period.

No other warranty is expressed or implied. ALAN is not liable for consequential damage.

QUALITY ASSURANCE:
ALAN maintains a Quality Assurance program that complies to the full intent of MIL-Q-9858A as it implies and as it is intended for a manufacturer of components.

Calibration of equipment for inspection and tests comply with the requirements of MIL-C-45662.

ATTENUATORS INTRODUCTION

DEFINITION:

An attenuator is a linear passive device, so designed that when the device is inserted in a transmission circuit, a calculated amount of attenuation or loss or control of the signal level may be had, without the introduction of impedance or phase distortion. ALAN attenuators are available in five broad categories:

* Fixed
* Variable or Rotary
* Digital or Programmable
* Toggle
* Push Button (In-Line Additive)

APPLICATION:

STANDARDS - Attenuators are used to provide a standard of attenuation in loss measurements. The known attenuator is used to evaluate an unknown loss by comparison. The accuracy of the standard need be no greater than the system requirements.

POWER REDUCTION - Attenuators are employed to prevent burnout or overloading of sensitive equipment such as crystals that might otherwise saturate beyond the square law region. They are also used to extend the range of power meters and other equipment.

BUFFING AND ISOLATION - Attenuators are used to prevent the interaction of two components. They are also used as buffer pads to isolate the effect of a mismatched or variable impedance on other circuit elements.

DESIGN:

ALAN's Fixed Attenuators are accurate attenuation standards for use in the DC to 2 GHz region. These Pads are constructed using precision metal film resistive elements. They are bi-directional, exceptionally stable, and unaffected by temperature and humidity changes.

ALAN's Variable Attenuators are of rugged aluminum construction using precision metal film resistive elements in a pi configuration. These units are designed around MILA24215. The 50V & 75V use an index mechanism that will provide 250,000 cycles operational life. Each unit is supplied with index stops, knobs, and provisions to panel mount the attenuator for environmental requirements.

ALAN's Digital or Programmable Attenuators provide a fast and precise means for automatic testing in the DC-1250 MHz region. They are available in four basic configurations: 0-1.5 dB in .1 dB steps, 0-31 dB in 1 dB steps, 0-63 dB in 1 dB steps, 0-127 dB in 1 dB steps. Each section of the Device can be individually inserted in any sequence by applying 26.5 VDC to its line control. Standard units are arranged in a binary sequence, but other steps are available.

ALAN's In-Line Attenuators are offered as Toggle Switch or Push-Button Devices. Either device is an excellent solution when space or weight are constraints on attenuator choice. These devices are available in several configurations: 0-31.5 dB in .5 dB steps, 0-42 dB in 1 dB steps, 0-63 dB in 1 dB steps, 0-82.5 dB in .5 dB steps, and 0-102 in 1 dB steps. The Toggle Switch and the Push-Button Attenuators are individually shielded to maintain accuracy through out the entire frequency range.

STABILITY:

All ALAN attenuators are constructed using 1% precision film resistors designed in pi networks. The units will exhibit a long term stability of better than 0.1 dB per year when operated within the rated power, temperature and environmental conditions.

IMPEDANCE:

Coaxial attenuators generally have a characteristic impedance of 50 or 75 Ohms; however, other impedance levels can be supplied upon request.

SPECIAL DESIGN:

ALAN specializes in the development and manufacture of Attenuators to meet specific applications. We will readily assist you in determining proper specifications for your system application. Special models may be ordered for unique applications where frequency, attenuation value, accuracy, size, weight, controls or connectors may be of prime importance.

STEP ATTENUATORS: LOW ATTENUATION - MEDIUM ATTENUATION

V SERIES:

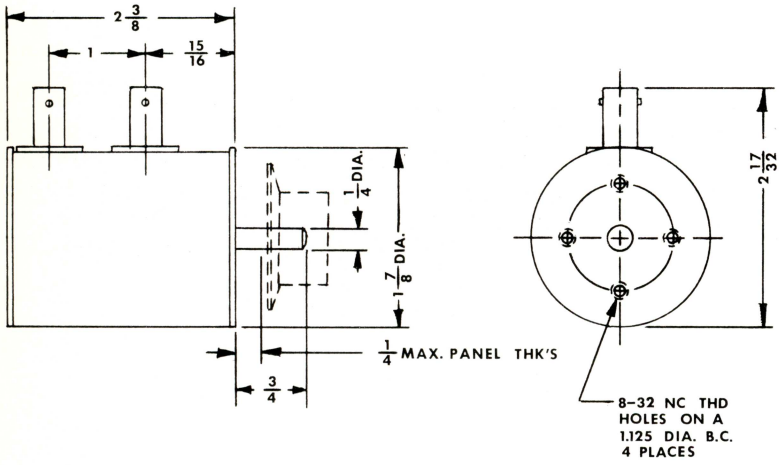
The V Series of step attenuators offer excellent electrical specifications over the DC-2 GHz frequency range and are available in steps of .1 dB, 1.0 dB, and 10 dB. The units containing 10 dB steps are available in several attenuation ranges in either 50 or 75 Ohm impedance as standard "off-the-shelf attenuators." This series employs an index mechanism that will provide 250,000 cycles operational life and are of rugged aluminum construction using precision metal film resistive elements in a pi configuration. Each unit is supplied with index stops, knobs, and provisions to panel mount the device with up to four 8-32 UNC screws for stringent environmental requirements. This series was designed with flexibility. Special requirements can be adapted at an economical cost.

ELECTRICAL SPECIFICATIONS

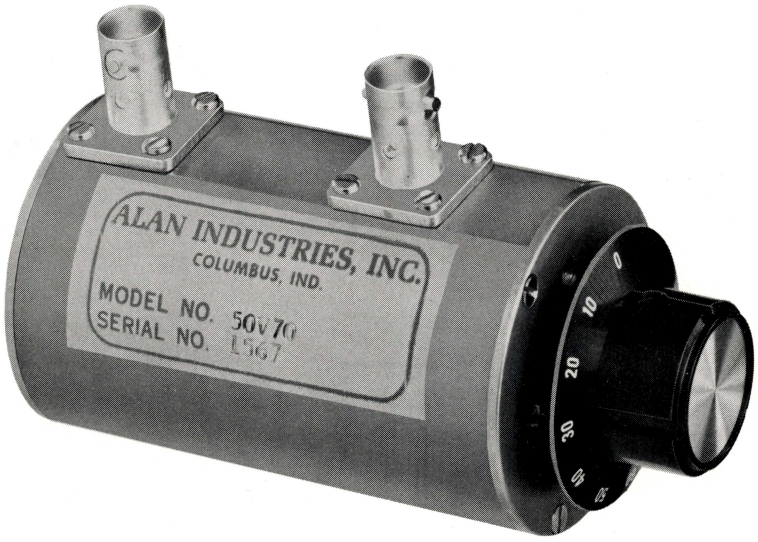
MODEL		50V1	50V10	50V70	50V80	50V90	50V100	75V1	75V10	75V70
ATTENUATION RANGE		0-1.0dB 0.1dB STEPS	0-10dB 1.0dB STEPS	0-70dB 10dB STEPS	0-80dB 10dB STEPS	0-90dB 10dB STEPS	0-100dB 10dB STEPS	0-1.0dB 0.1dB STEPS	0-10dB 1.0dB STEPS	0-70dB 10dB STEPS
FREQUENCY RANGE		DC-.5GHz	DC-2GHz	DC-2GHz	DC-1GHz	DC-1GHz	DC-1GHz	DC-.5GHz	DC-1GHz	DC-1GHz
IMPEDANCE		50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS	75 OHMS	75 OHMS	75 OHMS
ACCURACY	DC-30MHz	.02	0.1	0.2	0.2	0.2	0.2	.02	0.1	0.2
(dB)	30 MHz-.5GHz	.03	0.2	0.5	0.5	1.0	1.0	.03	0.2	0.5
OR % OF	.5GHz-1GHz		0.3	1.0	1.0	0-80dB ±1.0dB 90dB±3%	0-80dB ±1.0dB 90-100dB±3%		0.3	0.75
INDICATED dB	1-2 GHz		0.4	1.5						
MAXIMUM	DC-.5GHz	1.1:1	1.1:1	1.1:1	1.1:1	1.1:1	1.1:1	1.15:1	1.15:1	1.15:1
VSWR	.5GHz-1GHz		1.2:1	1.2:1	1.2:1	1.2:1	1.2:1		1.3:1	1.3:1
	1GHz-2GHz		1.4:1	1.4:1						
INSERTION	DC-.5GHz	0.6	0.1	0.1	0.1	0.1	0.1	0.6	0.1	0.1
LOSS MAX.	.5GHz-1GHz		0.3	0.3	0.3	0.3	0.3		0.3	0.3
(dB)	1GHz-2GHz		0.4	0.4						
POWER (WATTS) AVE.		1.0	1.0	0.5	0.5	0.5	0.5	1.0	1.0	0.5
DIMENSIONAL DRAWINGS		A	A	B	B	B	B	A	A	B
CONNECTORS		BNC FEMALE SUPPLIED UNLESS OTHERWISE SPECIFIED 50 OHM UNITS AVAILABLE WITH TNC,N & SMA CONNECTORS 75 OHM TNC, N & F								
TEMPERATURE RANGE		-20° C TO +125° C								
PRICE		$80.00	$80.00	$80.00	$95.00	$120.00	$130.00	$80.00	$80.00	$80.00

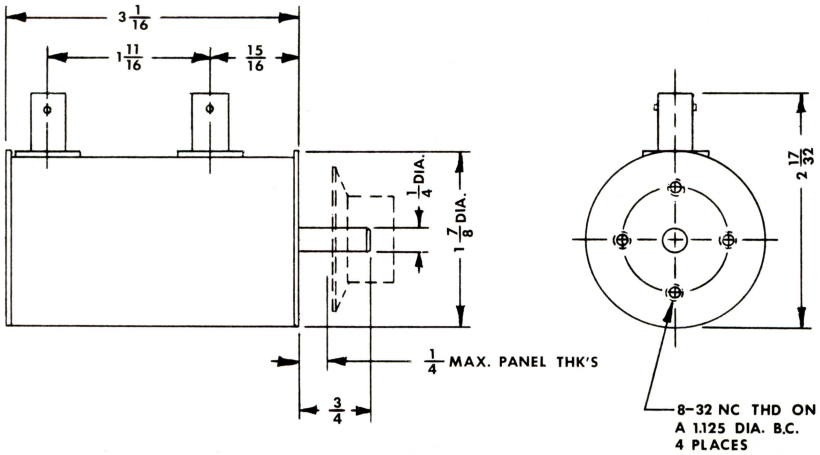
ORDERING INFORMATION:

TO ORDER SPECIFY: Impedance, Category (V), Total Attenuation Range, and Type of Connectors. For example to order a 75 Ohm unit with total attenuation of 70 dB in 10 dB steps with Type "F" connectors, order Model 75V70F.



Dimensional Drawing A





Dimensional Drawing B

STEP ATTENUATORS: HIGH ATTENUATION

V SERIES:

Total attenuation of 130 dB in steps of 10 dB with 50 Ohm characteristic impedance at ½ watt average power. Usable to 1 GHz. Excellent electrical specifications:

ELECTRICAL SPECIFICATIONS:

FREQUENCY RANGE:
10-500 MHz

IMPEDANCE:
50 Ohms

ATTENUATION:
0-130 dB in 10 dB steps or 0-120 dB in 10 dB steps

VSWR:
1.2:1 Maximum

ACCURACY:
± 1% from Nominal Setting

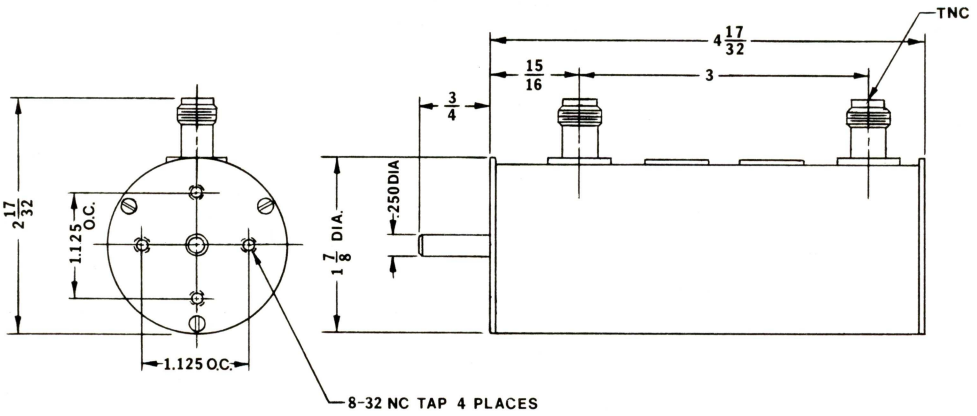
INSERTION LOSS:
.3 dB Maximum

POWER:
½ watt average 1 KW peak

CONNECTORS:
TNC, SMA, or Type N

ROTATION ANGLE BETWEEN STEPS:
25.7° with Stops

PRICE:
$195.00

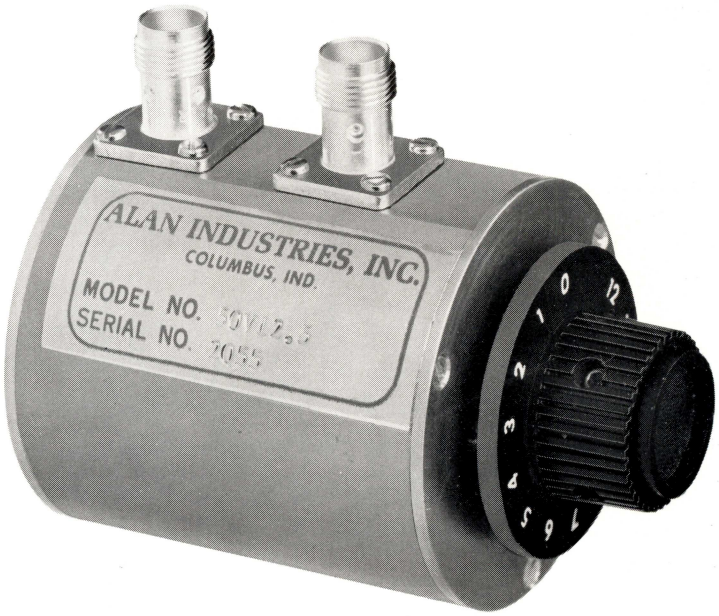


TO ORDER SPECIFY: Impedance, Category (V), Total Attenuation and type of Connectors. For example to order a 50 Ohm unit with total attenuation of 130 dB in 10 dB steps with TNC connectors, order Model 50V130T.

STEP ATTENUATOR: HIGH POWER

"V" SERIES

The Big Brother of the Alan Attenuator Family . . . A 10 Watt Rotary unit covering the frequency region from DC-500 MHz with total attenuation of 10 dB in steps of 1 dB with characteristic impedance of 50 Ohms.



ELECTRICAL SPECIFICATIONS:

FREQUENCY RANGE:
DC-500 MHz

IMPEDANCE:
50 Ohms

ATTENUATION:
0-10 dB in 1 dB Steps

VSWR:
1.3:1

ACCURACY:
.2 dB at 300 MHz
.4 dB at 500 MHz

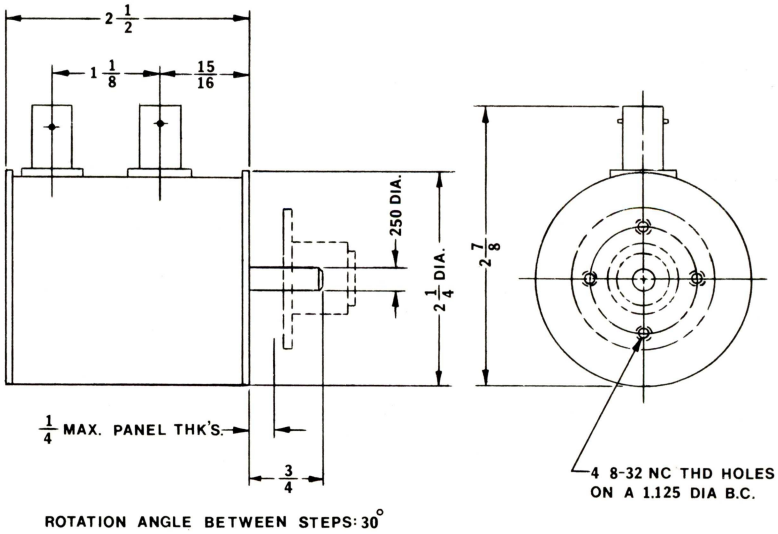
INSERTION LOSS:
.2 dB Maximum

POWER:
10 Watt Average

CONNECTORS:
BNC, TNC, N or SMA

ROTATION ANGLE BETWEEN STEPS:
30°

PRICE:
$255.00



ROTATION ANGLE BETWEEN STEPS: 30°

TO ORDER SPECIFY: Impedance, Category (V), Total Attenuation, Total Wattage, and type of Connectors. For example to order a 50 Ohm unit with total attenuation of 10 dB in 1 dB Steps with average power of 10 Watts and Type N connectors, order Model 50V10-10N.

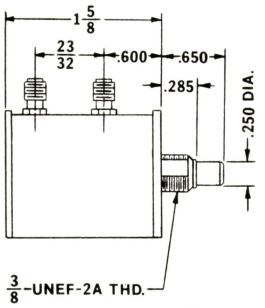
SUBMINIATURE STEP ATTENUATORS

SV SERIES:

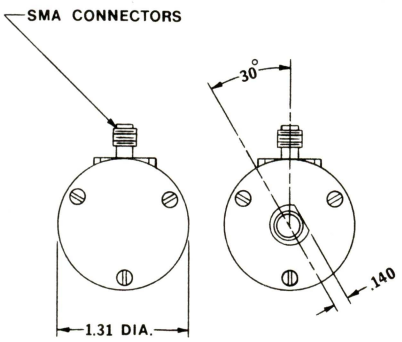
The SV is a Subminiature Attenuator with total attenuation of 100 dB in steps of 10 dB or total attenuation of 10 dB in 1 dB steps that cover the frequency range of DC-1.5 GHz. These units are supplied with index stops, knobs, and provisions to panel mount for environmental requirements.

DIMENSIONAL DRAWINGS:

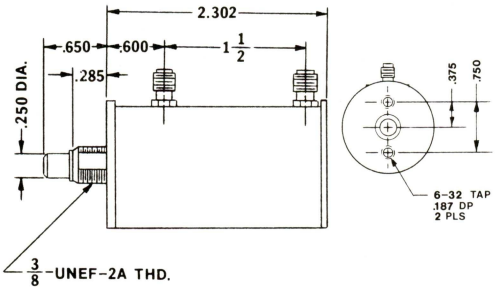
50SV10
LENGTH



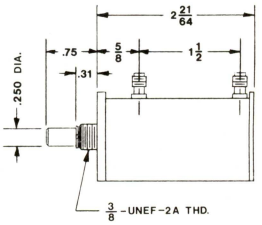
COMMON DIMENSIONS:



50SV60
LENGTH

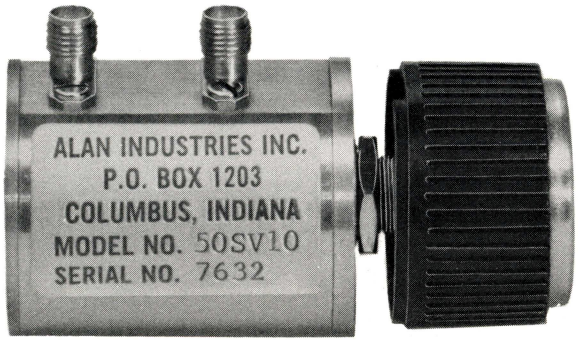


50SV100
LENGTH



ELECTRICAL SPECIFICATIONS:

MODEL		**50SV10**	**50SV60**	**50SV70**	**50SV100**
FREQUENCY RANGE:		DC-1.5 GHz	DC-1.5 GHz	DC-1.5 GHz	DC-1GHz
IMPEDANCE:		50 Ohms	50 Ohms	50 Ohms	50 Ohms
ATTENUATION:		0-10 dB in 1 dB steps	0-60 dB in 10 dB steps	0-70 dB in 10 dB steps	0-100 dB in 10 dB steps
VSWR:	DC-1 GHz	1.2:1 Maximum	1.2:1 Maximum	1.2:1 Maximum	1.3:1 Maximum
	1 GHz-1.5GHz	1.4:1 Maximum	1.4:1 Maximum	1.4:1 Maximum	
ACCURACY:	DC-500 MHz				± 1 dB
	DC-1 GHz	± .3 dB	± .75 dB	± .75 dB	± 3% of Indicated
	1 GHz-1.5GHz	± .4 dB	± 1.5 dB	± 1.5 dB	
INSERTION LOSS:		.2 dB Maximum	.3 dB Maximum	.3 dB Maximum	.3 dB Maximum
POWER:		1 Watt	1 Watt	1 Watt	1 Watt
ROTATION ANGLE BETWEEN STEPS:		30° with stops	45° with stops	45° with stops	30° with stops
CONNECTORS:		SMA or SMC	SMA or SMC	SMA or SMC	SMA or SMC
PRICE:		$100.00	$105.00	$110.00	$120.00



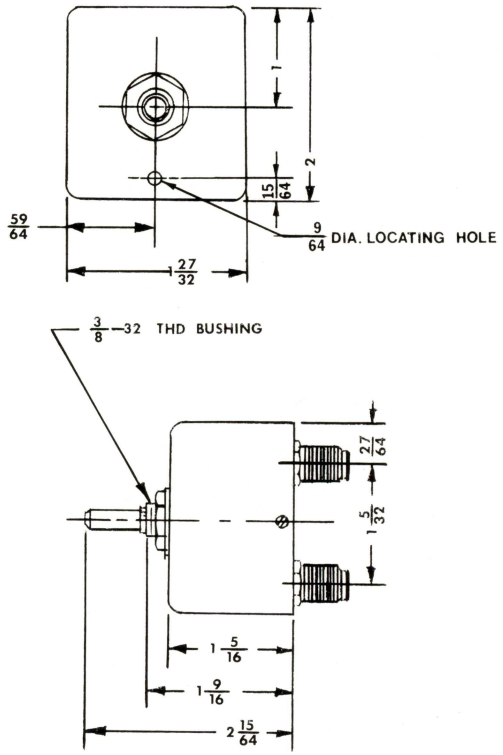
TO ORDER SPECIFY:

Impedance, Category (SV), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 60 dB with SMA connectors, order Model 50SV60SMA.

LOW COST STEP ATTENUATORS

"B" SERIES

Now a Precision Step Attenuator for $45 that is available with attenuation of 50 dB in 10 dB steps or 10 dB in 1 dB steps. Connector options are type F, BNC or TNC in characteristic impedance of 50 or 75 Ohms.



ELECTRICAL SPECIFICATIONS:

MODEL		50B10	50B50	75B10	75B50
FREQUENCY RANGE:		DC-300 MHz	DC-300 MHz	DC-300 MHz	DC-300 MHz
IMPEDANCE:		50 Ohms	50 Ohms	75 Ohms	75 Ohms
ATTENUATION:		0-10 in 1 dB steps	0-50 in 10 dB steps	0-10 in 1 dB steps	0-50 in 10 dB steps
VSWR:		1.3:1 Max.	1.2:1 Max.	1.3:1 Max.	1.2:1 Max.
ACCURACY:	@30 MHz @300 MHz	± .1 dB ± .3 dB	± .2 dB ± 2% of Indicated	± .1 dB ± .3 dB	± .2 dB ± 2% of Indicated
INSERTION LOSS:		.4 dB Max.	.2 dB Max.	.4 dB Max.	.2 dB Max.
POWER:		1 watt	1 watt	1 watt	1 watt
ROTATION ANGLE BETWEEN STEPS:		30°	30°	30°	30°
CONNECTORS:		BNC, TNC	BNC, TNC	F, BNC, TNC	F, BNC, TNC
PRICE:		$45	$45	$45	$45

TO ORDER SPECIFY: Impedance, Category (B), Total Attenuation and type of Connectors. For example to order a 75 Ohm unit with total attenuation of 50 dB in 10 dB steps, with Type F connectors, order Model 75B50F.

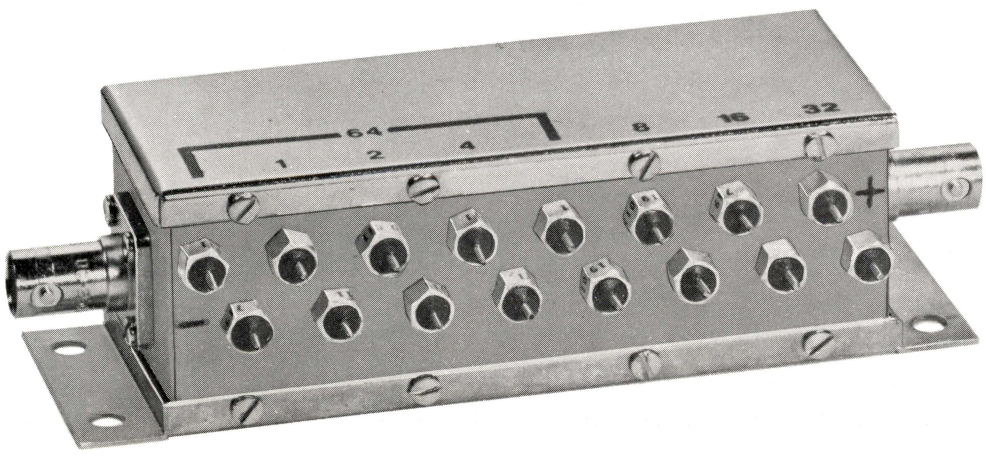
PROGRAMMABLE ATTENUATORS

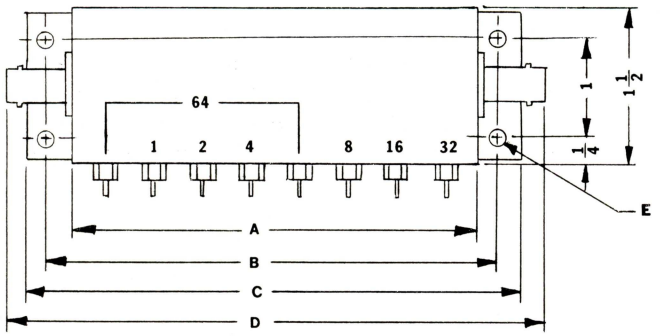
DA SERIES

The DA Series of Programmable and Remote Controlled Attenuators are ideal for automatic testing over the frequency range of DC-1250 MHz. They feature total attenuation as high as 127 dB and steps as diminutive as .1 dB. Each attenuation section of the attenuator can be individually inserted in any sequence by applying 26.5 VDC to its line control. The switching devices employed in these units have a switching speed of 6 milliseconds and a life expectancy of ten million operations. Standard units are arranged in a binary sequence, but other steps and other control voltages are available upon request.

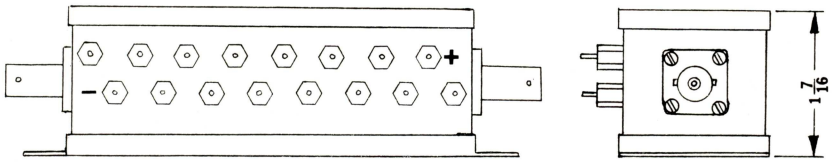
ELECTRICAL SPECIFICATIONS:

MODEL	**75DA15**	**75DA31**	**75DA63**
FREQUENCY RANGE:	DC-500 MHz	DC-500 MHz	DC-500 MHz
IMPEDANCE:	75 Ohms	75 Ohms	75 Ohms
ATTENUATION RANGE:	15 dB in 1 dB steps	31 dB in 1 dB steps	63 dB in 1 dB steps
ATTENUATION STEPS:	1, 2, 4, 8 dB	1, 2, 4, 8, and 16 dB	1, 2, 4, 8, 16 and 32 dB
VSWR:	1.2:1 Maximum	1.2:1 Maximum	1.2:1 Maximum
ACCURACY:	± 0.3 dB	± 0.4 dB	± 0.5 dB
INSERTION LOSS:	1 dB Maximum	1.3 dB Maximum	1.5 dB Maximum
POWER:	.5 Watts	.5 Watts	.5 Watts
DC CONTROL:	On level +17 to +26.5 VDC, Off level: 0+5 VDC, @17 ma per Bit		
CONNECTORS:	BNC, TNC, N or Type "F" DC-Solder Terminals	BNC, TNC, N or Type "F" DC-Solder Terminals	BNC, TNC, N or Type "F" DC-Solder Terminals
SWITCHING SPEED:	6 Milliseconds	6 Milliseconds	6 Milliseconds
SWITCH LIFE:	10^7 per Bit	10^7 per Bit	10^7 per Bit
PRICE:	$190	$240	$270





MODEL	A	B	C	D	E
50 DA 1.5	2 1/8	2 11/16	3 1/8	3 31/64	3/16
50 DA 15	2 1/8	2 11/16	3 1/8	3 31/64	3/16
50 DA 31	2 11/16	3 3/16	3 5/8	4 3/64	3/16
50 DA 63	3 3/16	3 11/16	4 1/8	4 35/64	3/16
50 DA 127	4 1/8	4 11/16	5 1/8	5 9/16	3/16



MODEL		50DA1.5	50DA15	50DA31	50DA63	50DA127
ATTENUATION RANGE		0-1.5dB 0.1dB STEPS	0-15dB 1dB STEPS	0-31dB 1dB STEPS	0-63dB 1dB STEPS	0-127dB 1dB STEPS
ATTENUATION STEPS (dB)		0.1,0.2,0.4,0.8	1,2,4,8	1,2,4,8,16	1,2,4,8,16,32	1,2,4,8, 16,32,64
FREQUENCY RANGE		DC-750MHz	DC-1500MHz	DC-1250MHz	DC-1250MHz	DC-1000MHz
OVERALL ACCURACY	AT 500MHz	± 0.1 @ 750MHz±0.15	± 0.3	± 0.5	0-31±0.5 32-63±1.0	0-31±0.5 32-63±1.0 64-127±1.5
	AT 1000MHz		± 0.4 @ 1500MHz±0.5	±0.75	0-31±0.75 32-63±1.5	0-31±0.7 32-63±1.5 64-127±3.0
INSERTION LOSS MAX.		1.5dB	1.5dB	1.7dB	2.0dB	2.5dB
MAX VSWR INTO 50 OHMS	AT 500MHz	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1
	AT 1000MHz		1.4:1	1.4:1	1.5:1	1.5:1
POWER (average)		1 WATT	1 WATT	0.5 WATT	0.5 WATT	0.5 WATT
RF CONNECTORS		BNC FEMALE, TNC FEMALE, N FEMALE OR SMA FEMALE				
INPUT REQUIREMENTS	LOGIC	4 BIT	4 BIT	5 BIT	6 BIT	7 BIT
	CONTROL	ON LEVEL: +17 to +26.5 VDC, OFF LEVEL: 0 to +5 VDC,@17 ma per BIT				
	CONNECTORS	SOLDER TERMINALS (one EACH, PLUS & MINUS TERMINAL PER BIT)				
SWITCHING SPEED		6 MILLISECONDS				
SWITCH LIFE		10,000,000 SELECTIONS per BIT				
PHYSICAL SIZE		SEE DRAWING	SEE DRAWING	SEE DRAWING	SEE DRAWING	SEE DRAWING
PRICE		$190.00	$190.00	$240.00	$270.00	$360.00

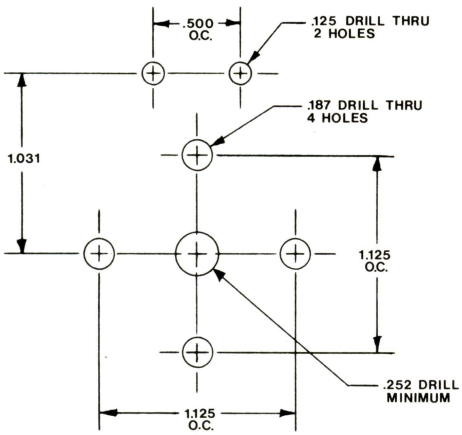
TO ORDER SPECIFY: Impedance, Category (DA), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 127 dB with SMA Female connectors, order Model 50DA127SMA.

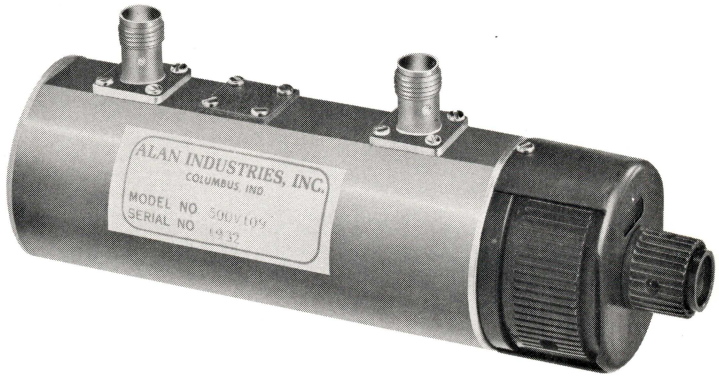
DUAL CONCENTRIC ATTENUATORS

"DV" SERIES

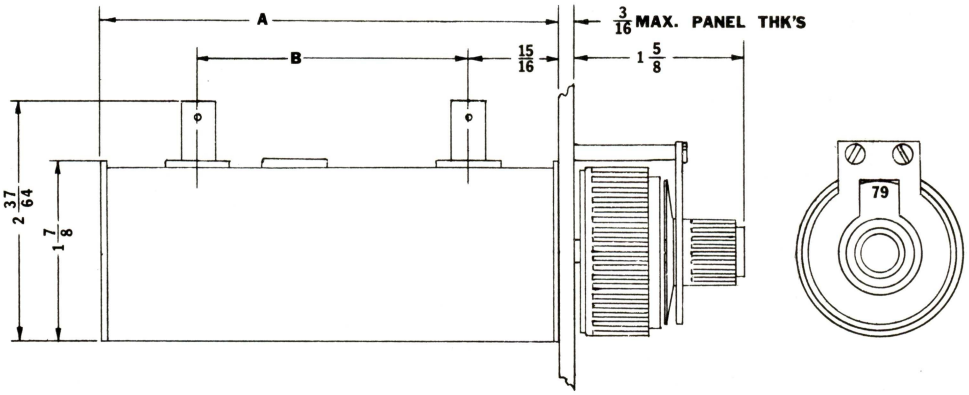
The "DV" Series feature minimum package size, high reliability and excellent accuracy specifications covering as high as 1500 MHz in frequency and a wide selection of steps and total attenuation ranges. Accuracy is held throughout the series by using precision metal film resistors housed in closely toleranced aluminum cavities.

All units feature direct reading dials to guarantee accurate readings at a glance. Total attenuation ranges of 10.9, 49, 69, 79, 89, 99, and 109 dB are available.





MODEL	A	B	MODEL	A	B
50 DV 10.9	4	$2\frac{1}{8}$	75 DV 10.9	4	$2\frac{1}{8}$
50 DV 49	4	$2\frac{1}{8}$	75 DV 49	4	$2\frac{1}{8}$
50 DV 79	$4\frac{3}{4}$	$2\frac{13}{16}$	75 DV 79	$4\frac{3}{4}$	$2\frac{13}{16}$
50 DV 109	$4\frac{3}{4}$	$2\frac{13}{16}$			



SPECIFICATIONS

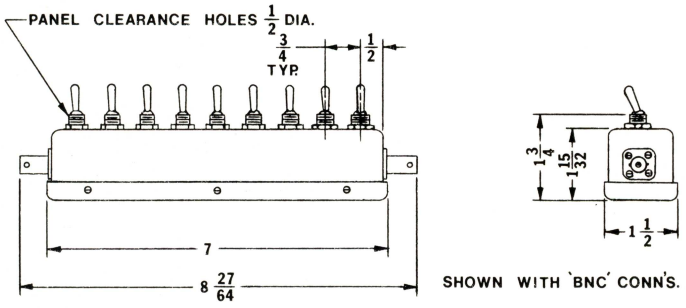
MODEL		50DV10.9	75DV10.9	50DV49	75DV49	50DV79	50DV109
ATTENUATION RANGE		0-10.9dB 0.1dB STEPS	0-10.9dB 0.1dB STEPS	0-49dB 1.0dB STEPS	0-49dB 1.0dB STEPS	0-79dB 1.0dB STEPS	0-109dB 1.0dB STEPS
FREQUENCY RANGE		DC-.5GHz	DC-.5GHz	DC-1.5GHz	DC-1GHz	DC-1.5GHz	DC-1GHz
IMPEDANCE		50 OHMS	75 OHMS	50 OHMS	75 OHMS	50 OHMS	50 OHMS
ACCURACY (± OR % OF INDICATED dB	DC-30MHz	0-.9: ±.02 1-10.9: ±0.1	0-.9: ±.02 1-10.9: ±0.1	±.2	±.2	±.2	±1%
	30MHz-500MHz	0-.9: ±.03 1-10.9: ±0.2	0-.9: ±.03 1-10.9: ±0.2	±.3	±.3	0-9: ±0.3 10-79: ±0.5	0-9: ±0.3 10-109: ±1.0
	.5GHz-1GHz			0-9: ±0.5 10-49: ±1.0	0-9: ±0.5 10-49: ±1.0	0-9: ±0.5 10-79: ±1.0	0-9: ±0.5 10-109: ±3%
	1.0GHz-1.5GHz			0-9: ±0.6 10-49: ±1.5		0-9: ±0.6 10-79: ±1.5	
MAXIMUM VSWR	AT 1 GHz			1.25:1	1.3:1	1.25:1	1.25:1
	AT MAXIMUM FREQUENCY	1.2:1	1.2:1	1.5:1		1.4:1	
MAX. INSERTION LOSS AT MAX. FREQUENCY		0.7dB	0.7dB	0.5dB	0.5dB	0.5dB	0.5dB
POWER AVERAGE		1 WATT	1 WATT	0.5 WATT	0.5 WATT	0.5 WATT	0.5 WATT
KNOB INDEXING		30°	30°	30°	30°	30°	30°
TEMPERATURE RANGE		-20° C TO +125° C					
CONNECTORS		BNC FEMALE SUPPLIED UNLESS OTHERWISE SPECIFIED. 50 OHM UNITS AVAILABLE WITH TNC,N & SMA CONNECTORS--75 OHM. TNC, N & F					
PRICE		$165.00	$165.00	$165.00	$165.00	$215.00	$235.00

TO ORDER SPECIFY: Impedance, Category (DV), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 79 dB with BNC Connectors, order 50DV79B.

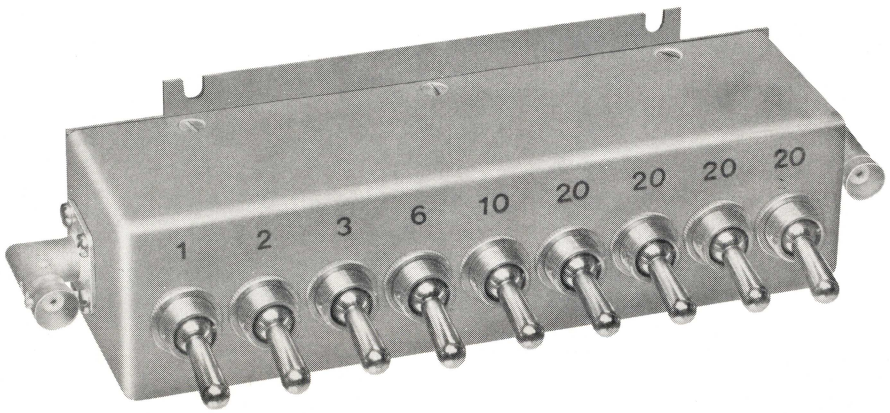
TOGGLE SWITCH ATTENUATORS

"TA" SERIES

Alan Industries' Toggle Switch Attenuators operate to 500 MHz in either 50 or 75 Ohm characteristic impedance. To insure longer life only heavy duty Toggle switches are used that assures reliability. These attenuators are available in steps of 0.5 and 1.0 dB. Nine-Step units of either 0 to 102 dB in 1 dB steps or 0 to 82.5 dB in 0.5 dB steps and Six-Step units of 0 to 42 dB in 1 dB steps.



MODEL	50TA42	75TA42	50TA82.5	75TA82.5	50TA102	75TA102
ATTENUATION RANGE:	0-42 in 1 dB steps		0-82.5 in 0.5 dB steps		0-102 in 1 dB steps	
ATTENUATION STEPS:	1, 2, 3, 6, 10 & 20 dB		0.5, 1, 2, 3, 6,10, 20, 20, 20 dB		1, 2, 3, 6, 10, 20, 20, 20, & 20 dB	
IMPEDANCE:	50	75	50	75		
FREQUENCY RANGE:	DC-500 MHz		DC-500 MHz		DC-500 MHz	
ACCURACY:	± .3 dB or 2%		± .3 dB or 2%		± .3 dB or 2%	
INSERTION LOSS:	1.4 dB @ 500 MHz		1.4 dB @ 500 MHz		1.4 dB @ 500 MHz	
VSWR:	1.3:1 Max.		1.3:1 Max.		1.3:1 Max.	
POWER:	0.5 watt		0.5 watt		0.5 watt	
CONNECTORS:	BNC, TNC, "N" or SMA		BNC, TNC, "N" or SMA		BNC, TNC, "N" or SMA	
DIMENSIONS:						
PRICE:	$80		$105		$105.00	

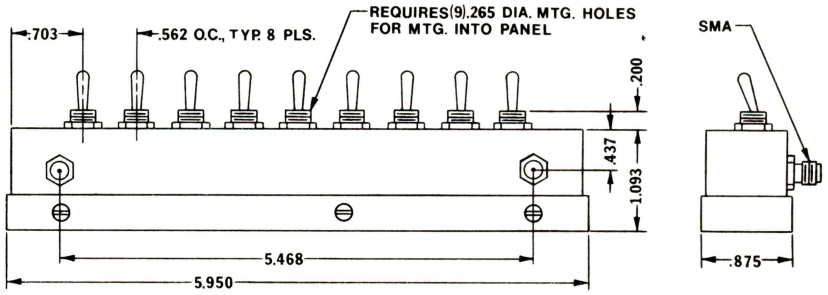


TO ORDER SPECIFY: Impedance, Category (TA), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 82.5 dB with BNC connectors, order Model 50TA82.5.

MINIATURE TOGGLE-SWITCH ATTENUATORS

STA SERIES

Alan's Miniature Toggle-Switch Attenuators are available in models providing 102 or 82.5 dB of attenuation over the frequency range of DC-500 MHz. Long life and high reliability are assured as 100,000 cycle life solid silver contact switches are used.



ELECTRICAL SPECIFICATIONS:

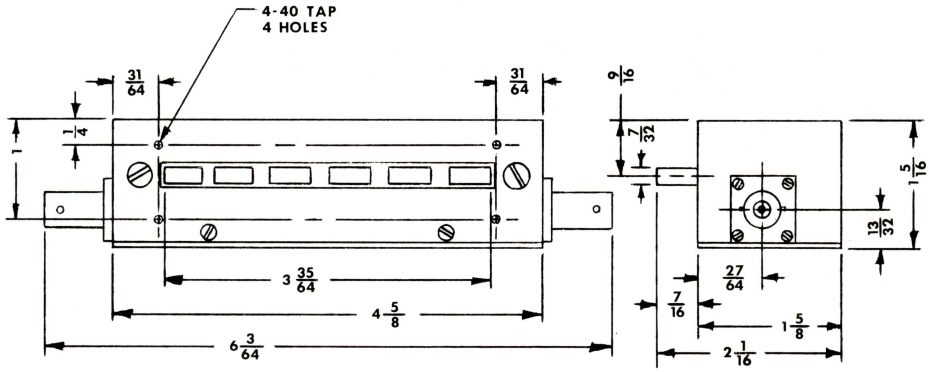
MODEL	**50STA82.5**	**50STA102**
FREQUENCY RANGE:	DC-500 MHz	DC-500 MHz
IMPEDANCE:	50 Ohms	50 Ohms
ATTENUATION:	0-82.5 dB in 0.5 dB steps; steps of 0.5, 1, 2, 3, 6, 10, 20, 20 and 20dB	0-102 dB in 1 dB steps; steps of 1, 2, 3, 6, 10, 20, 20, 20 and 20 dB
VSWR:	DC-250 MHz 1.2:1 Maximum 250-500 MHz 1.3:1 Maximum	DC-250 MHz 1.2:1 Maximum 250-500 MHz 1.3:1 Maximum
ACCURACY:	DC-250 MHz ± .2dB per section, over-all ± .5dB 250-500 MHz ± .3 dB, overall .8 dB	DC-250 MHz ± .2 dB per section, over-all ± .5 dB 250-500 MHz ± .3 dB, overall .8 dB
INSERTION LOSS:	1.2 dB Maximum	1.2 dB Maximum
POWER:	½ Watt	½ Watt
CONNECTORS:	SMA or SMC	SMA or SMC
PRICE:	$105.00	$105.00

TO ORDER SPECIFY: Impedance, Category (STA), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 102 dB with SMA connectors, order Model 50STA102SMA.

PUSH-BUTTON ATTENUATORS

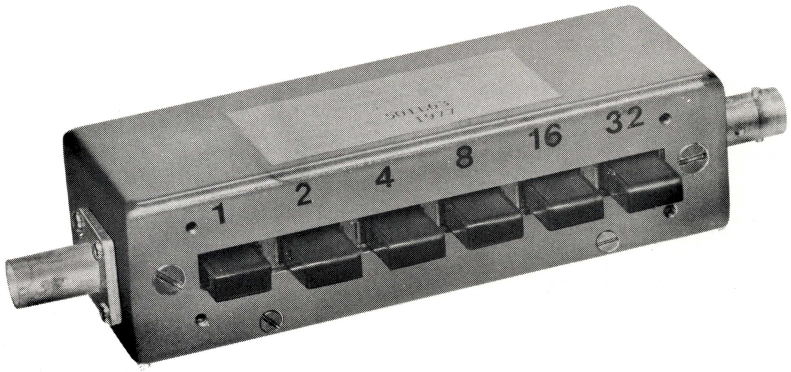
IL SERIES

Alan Industries' In-Line Push-Button attenuators are now available in 50 or 75 Ohm impedance operating from DC-500 MHz. This "Finger-Tip" control unit has unlimited use on a production line where accurate and rapid attenuation changes are necessary. The Push-Button unit is available in 0-31.5 dB in .5 dB steps, and 0-63 dB in 1 dB steps.



ELECTRICAL SPECIFICATIONS:

MODEL	**50IL31.5**
FREQUENCY RANGE:	DC-500 MHz
IMPEDANCE:	50 Ohms
ATTENUATION:	.5, 1, 2, 4, 8, 16 dB
VSWR:	1.2:1 Max.
ACCURACY:	30 MHz ± .1 dB Max. 500 MHz ± .1 dB or 1% Whichever is Greater
INSERTION LOSS:	.4 dB Max. @ 500 MHz
POWER:	½ Watt Average
CONNECTORS:	BNC, TNC, N or SMA
PRICE:	$80.00



ELECTRICAL SPECIFICATIONS:

MODEL	**50IL63**	**75IL31.5**	**75IL63**
FREQUENCY RANGE:	DC-500 MHz	DC-500 MHz	DC-500 MHz
IMPEDANCE:	50 Ohms	75 Ohms	75 Ohms
ATTENUATION:	1, 2, 4, 8, 16, 32 dB	.5, 1, 2, 4, 8, 16 dB	1, 2, 4, 8, 16, 32 dB
VSWR:	1.2:1 Max. @ 500 MHz	1.2:1 Max. @ 500 MHz	1.2:1 Max. @ 500 MHz
ACCURACY:	30 MHz ± .15 dB Max. 500 MHz ± .15 or 1% Whichever is Greater	30 MHz ± .1 dB 500 MHz ± .1 dB or 1% Whichever is Greater	30 MHz ± .15 dB Max. 500 MHz ± .15 or 1% Whichever is Greater
INSERTION LOSS:	.4 dB Max. @ 500 MHz	.4 dB Max.	.4 dB Max.
POWER:	½ Watt Average	½ Watt Average	½ Watt Average
CONNECTORS:	BNC, TNC, N or SMA	BNC, TNC, N orF	BNC, TNC, N or F
PRICE:	$80.00	$80.00	$80.00

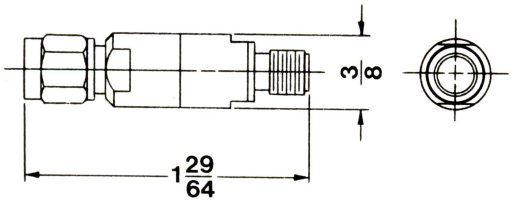
TO ORDER SPECIFY: Impedance, Category (IL), Total Attenuation and choice of connectors. For example to order a 75 Ohm device with total attenuation of 31.5 dB with SMA connectors, order Model 75IL31.5S.

FIXED ATTENUATORS: DC-2 GHz

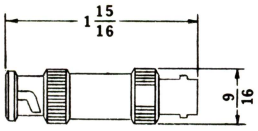
SP SERIES:

Alan Industries' 50SP and 75SP series of Coaxial Attenuators provide the user with a small, reliable, and economical general purpose pad. The 50SP is a 50 Ohm device operating over the frequency range of DC-2 GHz. The 75SP is a 75 Ohm device operating over the frequency range of DC-1 GHz. Calibration is recorded on each device for quick reference. The 50SP can be supplied with either BNC, TNC, N or SMA connectors, while the 75SP is available with BNC, TNC, N or F connectors. Also available is a DC-1GHz UHF attenuator pad in any value 1-20 dB.

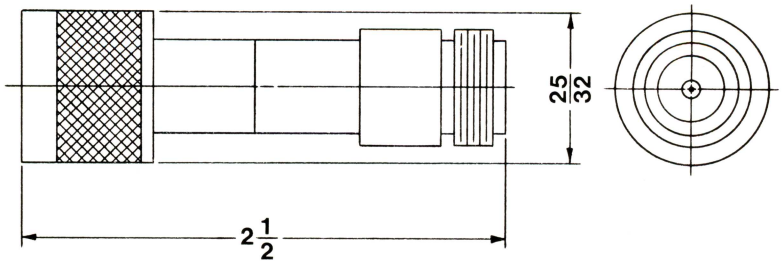
MODEL NUMBER		50 SP			75 SP	
FREQUENCY RANGE		DC-2GHz			DC-1GHz	
		1-20dB, ANY VALUE			1-20dB, ANY VALUE	
IMPEDANCE		50 OHMS			75 OHMS	
ACCURACY	DC-0.5GHz	± 0.3dB			±0.3dB	
	0.5-1GHz	±0.5dB			±0.5dB	
	1GHz-2GHz	±1.0dB				
CALIBRATION FREQUENCIES		30MHz, 1GHz			30MHz & 1 GHz	
CALIBRATION ACCURACY		± 0.1dB			±0.1dB	
MAXIMUM VSWR	.5GHz TO 1GHz	1.2:1			1.3:1	
	1GHz TO 2GHz	1.4:1				
POWER	1-10dB	1 WATT AVE			1 WATT AVE	
	11-20dB	0.5 WATT AVE			0.5 WATT AVE	
TEMPERATURE RANGE		-20°C to +125° C			-20° C to +125° C	
CONNECTOR		BNC & TNC	UHF & N	SMA	BNC & F	N
PRICE		$12.00	$15.00	$18.50	$12.00	$15.00



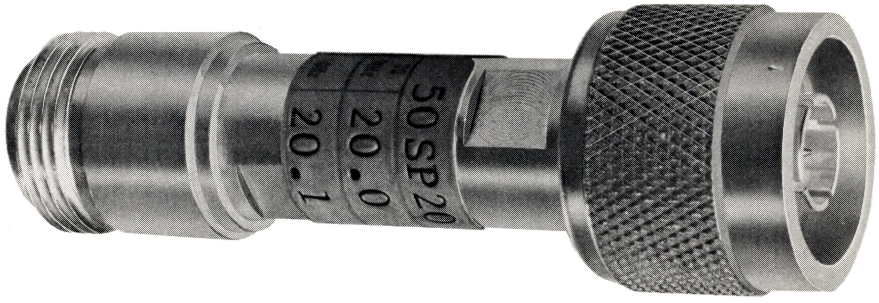
SMA



BNC



N



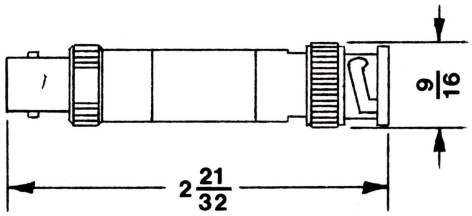
TO ORDER SPECIFY: Impedance, Category (SP), Total Attenuation, and Connectors. For example to order a 50 Ohm unit with 10 dB attenuation with BNC connectors, order Model 50SP10B.

FIXED ATTENUATORS: DC-1 GHz

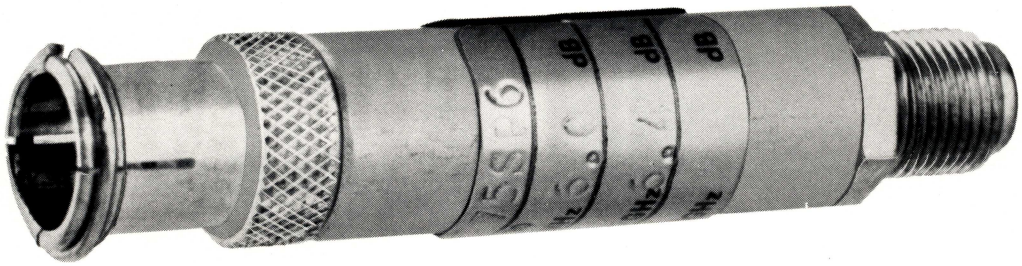
New

EXTENDED ATTENUATION RANGES

SP SERIES:



COMMON DIMENSIONS
21-60 dB
BNC



MODEL		50SP	75SP
FREQUENCY RANGE:		DC-1000 MHz	DC-1000 MHz
ATTENUATION:		21-60 (Any Value)	21-60 (Any Value)
IMPEDANCE:		50 Ohms	75 Ohms
ACCURACY:	DC-500 MHz	± .3 dB	± .3 dB
	500-1000 MHz	± .7 dB	± .7 dB
CALIBRATION FREQUENCIES:		30MHz, 1 GHz	30 MHz, 1 GHz
CALIBRATION ACCURACY:		± 0.1 dB	± 0.1 dB
MAXIMUM VSWR:		1.2:1	1.3:1
POWER:		.5 watt average	.5 watt average
TEMPERATURE RANGE:		-20° C to +125° C	-20° C to +125° C
CONNECTOR:		BNC & TNC, N or SMA	BNC, & F N
PRICE:		$18.00 $21.00 $22.50	$18.00 $21.00

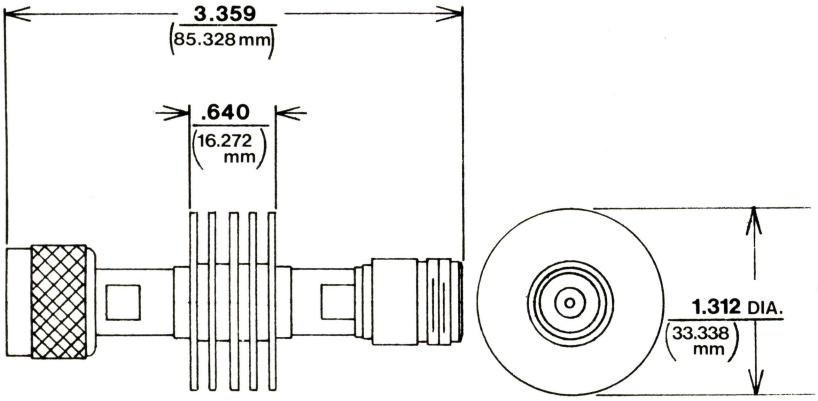
TO ORDER SPECIFY: Impedance, Category (SP), Total Attenuation, and Connectors, For example to order a 50 Ohm unit with 50 dB attenuation with BNC connectors, order Model 50SP50B.

FIXED ATTENUATORS: HIGH POWER

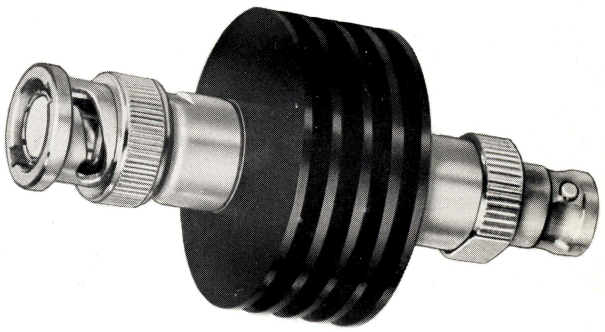
"HP SERIES":

New

The "HP" Series of Attenuator Pads are available in 10 and 25 watts average power in any value 1-30 dB. These units are constructed using precision metal film resistive elements in a "T" configuration. Improved accuracy and VSWR specifications are offered at specific frequencies and attenuation values.

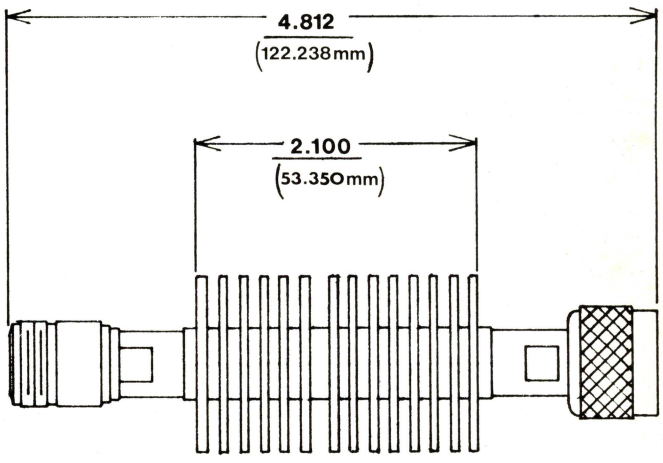


1 thru 30 DB
10 WATT



ELECTRICAL SPECIFICATIONS:

FREQUENCY RANGE:	DC-2GHz
IMPEDANCE:	50 Ohms
ATTENUATION:	1-30 dB (Any Value)
VSWR:	1.25:1 Maximum
ACCURACY:	± .5 DC-1GHz ± .75 1-2GHz
POWER:	10 or 25 Watts Average 3,000 Watts Peak
CONNECTORS:	BNC, TNC, or N
INPUT OUTPUT:	Bilateral
OPERATING TEMPERATURE RANGE:	-25° C to +85° C
TEMPERATURE STABILITY:	.005 dB/dB° C
FINISH:	Black Anodize
PRICE:	10 Watt (bilateral) $55 25 Watt (unilateral) $65



1 thru 30 DB
25 WATT

TO ORDER SPECIFY: Impedance, Category (HP), Total Attenuation, Total Maximum Average Power and type of Connectors. For example to order a 50 Ohm unit with 15 dB Attenuation and maximum power of 10 watts and BNC Connectors, order Model 50HP15-10-B.

PRECISION LOADS

"L" SERIES:

The "L" Series of Precision Loads are designed for use where a known value of VSWR or Return Loss is necessary for calibration purposes, such as bridge measurements. When ordering, please specify the exact values desired. For example, 50L1.0:1.

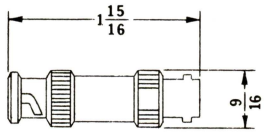
ELECTRICAL SPECIFICATIONS:

MODEL	**50L**	**75L**
FREQUENCY RANGE:	DC-2 GHz	DC-500 MHz
IMPEDANCE:	50 Ohms	75 Ohms
POWER:	½ watt average	½ watt average
CONNECTORS:	N Male or N Female BNC or TNC	"F" Male Screw On and BNC
VSWR ACCURACY:	DC-1 GHz ±3% 1 GHz-2 GHz ±5%	
RETURN LOSS ACCURACY:		½ dB
VALUES AVAILABLE:	1.0:1, 1.1:1, 1.2:1, 1.5:1 and 2.0:1	50, 30, 26, 20 and 15 dB
Other Values can be supplied upon request.		
PRICE:	$22.50	$22.50

IMPEDANCE MATCHING PADS

Z SERIES

The Z Series of Matching Pads are designed to connect two different impedances without the introduction of reflections over the DC-1 GHz frequency range. The most common of these is 50 Ohms to 75 Ohms. Every matching pad has each connector port labeled indicating its respective impedance, and the insertion loss. These units are available in a wide range of impedances, a few of the most common are shown and are available with any combination of standard connectors.



BNC

MODEL	50z75	50z90	50z93	50z100	50z135	75z50	75z93	50z600
FREQUENCY RANGE	DC-1GHz	DC-0.5GHz	DC-0.5GHz	DC-0.5GHz	DC-0.5GHz	DC-1GHz	DC-0.5GHz	DC-50MHz
MAXIMUM VSWR	1.2:1 (21dB RETURN LOSS)							
POWER	0.5 WATT AVERAGE AT 25° C							
INSERTION LOSS	5.6dB	6.9dB	7.2dB	7.6dB	9.5dB	5.6dB	4.2dB	16.6dB
MALE CONNECTOR IMPEDANCE	50	50	50	50	50	75	75	50
FEMALE CONNECTOR IMPEDANCE	75	90	93	100	135	50	93	600
CONNECTORS	BNC, TNC, N, UHF, AND F							
TEMPERATURE RANGE	-20° C TO +125° C							
PRICE	$12.00 ANY UNIT WITH BNC, TNC, AND F CONNECTORS							
	$15.00 ANY UNIT WITH N OR UHF CONNECTORS							

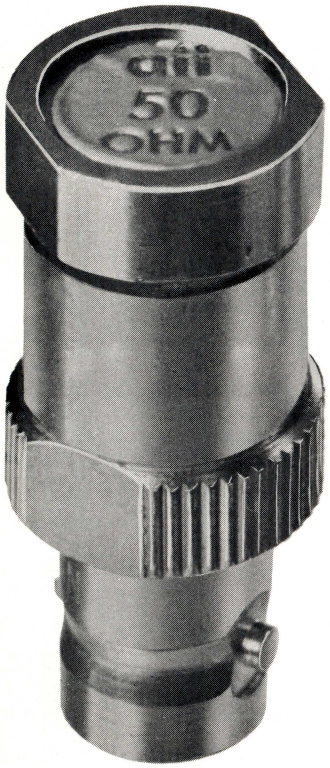
TO ORDER SPECIFY: Impedance, Category (Z), Impedance, and Type of Connectors. For example to order a 50 Ohm to 135 Ohm Matching Pad with BNC Connectors both connector ports, order Model 50Z135B.

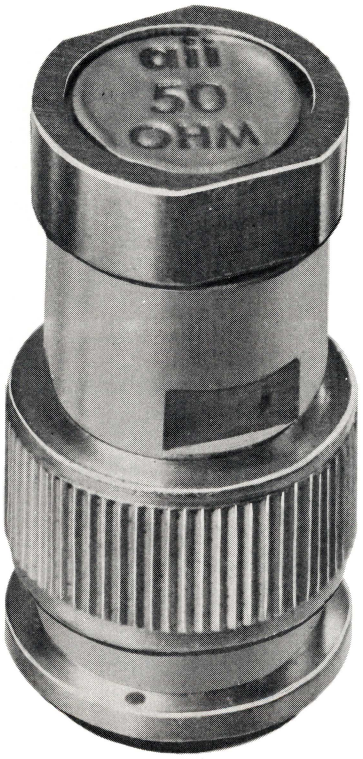
TERMINATIONS

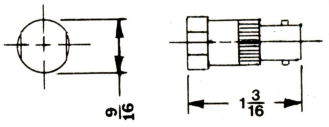
"T" SERIES:

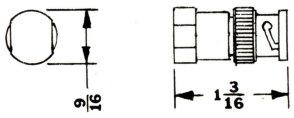
Alan Industries' series 50T and 75T are low power, single terminal, devices intended to terminate 50 Ohm and 75 Ohm transmission lines respectively. They are available in a wide selection of connectors, and are particularly well suited for use as reference loads on hybrid junctions, reflection co-efficient bridges, and directional couplers. They are useful as termination loads for impedance measurements, and as dummy antennas.

MODEL	50T	75T
FREQUENCY RANGE	DC-3.0GHz	DC-1.0GHz
IMPEDANCE	50 OHMS	75 OHMS
VSWR	1.15:1 TO 2GHz	1.15:1 TO 1GHz
TEMPERATURE RANGE	-20° C TO +125° C	
POWER AVERAGE	0.5 WATT	0.5 WATT
CONNECTORS	BNC, TNC, & N SMA	BNC, TNC, N, AND F
PRICE	$12.00 $15.00	$12.00







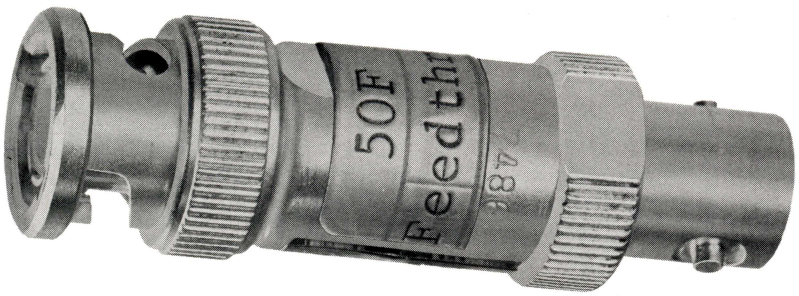


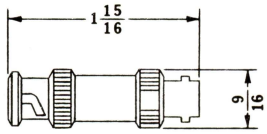
TO ORDER SPECIFY: Impedance, Category (T), and Connectors. For example to order a 50 Ohm Termination with BNC Male, order 50 TBM.

FEEDTHRU TERMINATIONS

"F" SERIES:

Alan Industries' 50F and 75F series of Feedthru Terminations are dual terminal devices intended to terminate a transmission line to a high impedance indicating device, such as, an oscilloscope. The units are available in both 50 and 75 Ohm impedance with a wide selection of connectors. The rugged construction, low VSWR, 2 watt power rating, and broad frequency coverage make them especially useful for most laboratory and system applications.





BNC

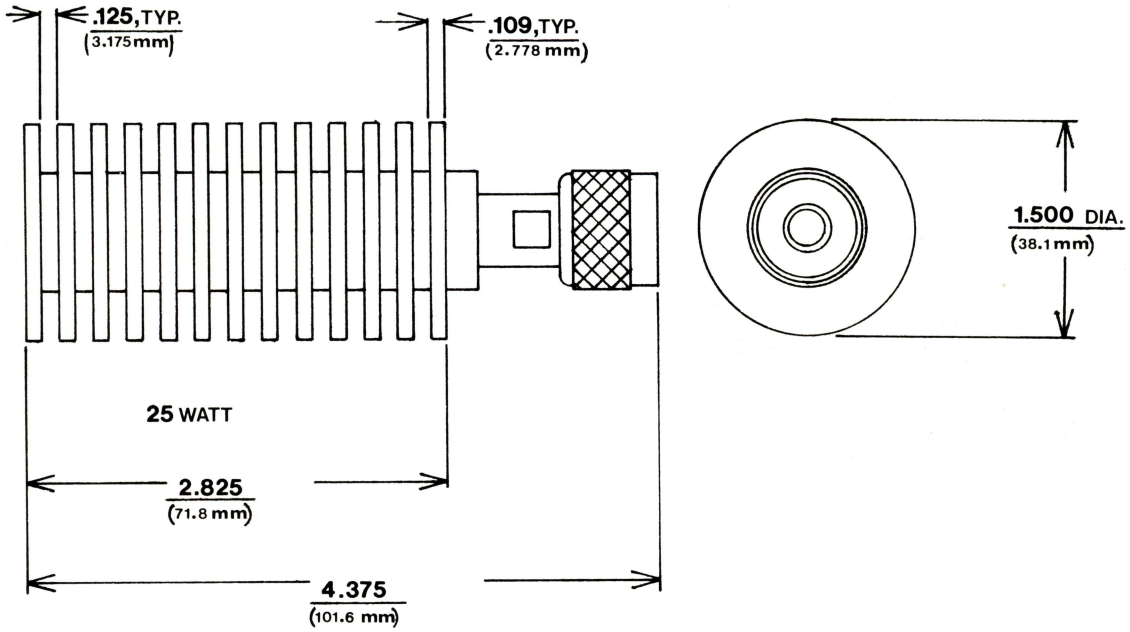
MODEL	50F	75F	93F
IMPEDANCE	50 OHM	75 OHM	93 OHM
FREQUENCY RANGE	DC-500 MHz	DC-300 MHz	DC-100MHz
VSWR (MAXIMUM)	1.2:1	1.2:1	1.2:1
POWER AVERAGE	2 WATTS	2 WATTS	2 WATTS
CONNECTORS	BNC, TNC, AND N	BNC, TNC, N, AND F	BNC, TNC,
TEMPERATURE RANGE	-20° C TO +125°C		
PRICE	$13.00	$13.00	$13.00

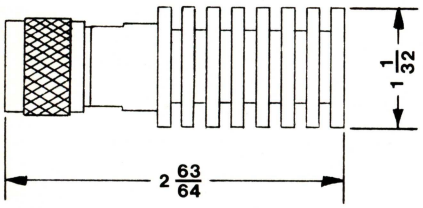
TO ORDER SPECIFY: Impedance, Category (F), and type of connectors. For example to order a 50 Ohm unit with BNC connectors, order Model 50FBNC.

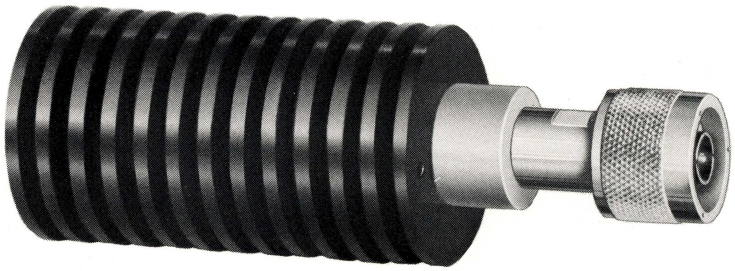
LOAD-HIGH POWER

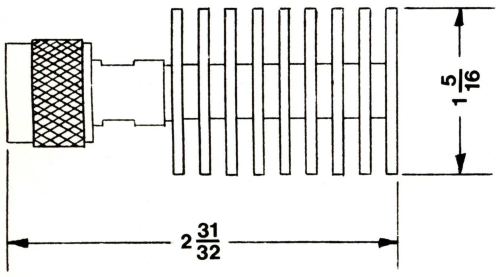
LH SERIES:

The LH Termination Series are constructed with precision resistors mounted in a housing designed for the best possible VSWR over the frequency range. Cooling fins are added to increase power dissipation. The power rating is conservative and based on temperature and operating conditions. Special power requirements are available upon request.









ELECTRICAL SPECIFICATIONS:

MODEL	50LH10	50LH25	50LH10-4
FREQUENCY RANGE:	DC-1500 MHz	DC-1500 MHz	DC-4 GHz
IMPEDANCE:	50 Ohms	50 Ohms	50 Ohms
VSWR:	1.1:1 Maximum	1.1:1 Maximum	1.15:1 Maximum
AVERAGE POWER:	10 Watts	25 Watts	10 Watts
PEAK POWER:	5,000 Watts	5,000 Watts	5,000 Watts
OPERATING TEMPERATURE:	-55° C-+85° C	-55° C-+85° C	-55° C-+85° C
HUMIDITY:	0-90° Relative Humidity	0-90° Relative Humidity	0-90° Relative Humidity
CONNECTORS:	N, TNC and BNC	N, TNC and BNC	N
PRICE:	$40.00	$45.00	$55.00

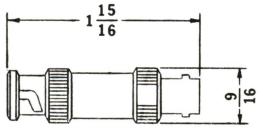
TO ORDER SPECIFY: Impedance, Category (LH), Power Required, and type of Connectors. For example to order a 50 Ohm unit with average power of 25 watts and TNC connectors, order Model 50LH25T.

VIDEO THROUGH UHF BROADBAND DETECTORS

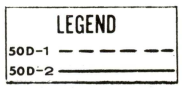
"D" SERIES:

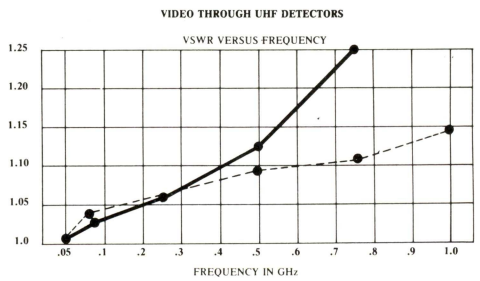
Detectors are ideal for most laboratory and system applications. The 50D and 75D combine flat frequency response, and low VSWR over a frequency range of 100 KHz to 1 GHz at relatively low cost. The frequency characteristics of RF devices are conveniently measured with the 50D and 75D detectors, a leveled sweep generator, and an oscilloscope. The RF output of the device, such as a broadband RF amplifier, is converted to DC by the detector, and displayed on the vertical axis of the oscilloscope. The horizontal axis of the oscilloscope is driven by the sweep voltage of the sweep oscilliator.

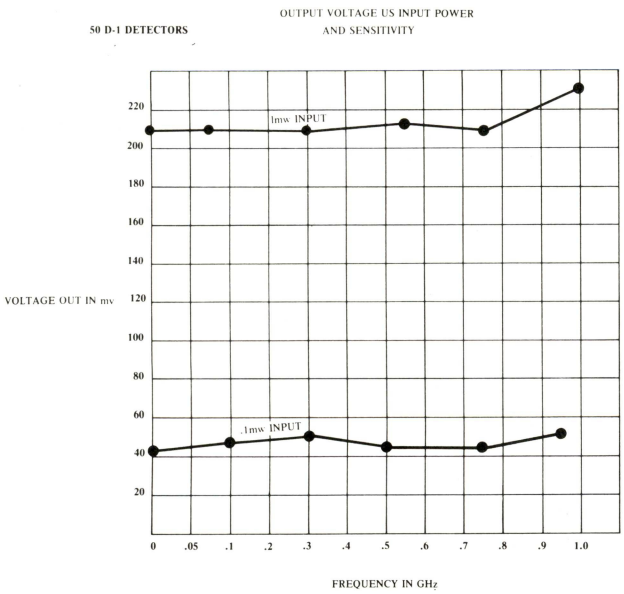
MODEL	50D-1	50D-2	75D-1	75D-2
FREQUENCY RANGE	100KHz TO 1GHz	100KHz TO 0.5GHz	100KHz TO 1 GHz	100KHz TO 0.5GHz
FREQUENCY RESPONSE	±1.0dB	±1.5dB	±1.0dB	±1.5dB
INPUT IMPEDANCE	50 OHMS	50 OHMS	75 OHMS	75 OHMS
OUTPUT POLARITY	POSITIVE OR NEGATIVE, AS SPECIFIED BY CUSTOMER			
VSWR MAXIMUM	1.2:1 AT MAXIMUM FREQUENCY			
TANGENTIAL SIGNAL SENSITIVITY	-40dBm MIN	-40dBm MIN	-40dBm MIN	-40dBm MIN
CONNECTORS, RF IN	BNC, TNC, N, UHF FEMALE, AND F			
CONNECTORS, DC-OUT	BNC, TNC, N, UHF FEMALE, AND F			
MAXIMUM INPUT POWER	180 mW	1 WATT	180 mW	1 WATT
PRICE	$30.00	$30.00	$30.00	$30.00

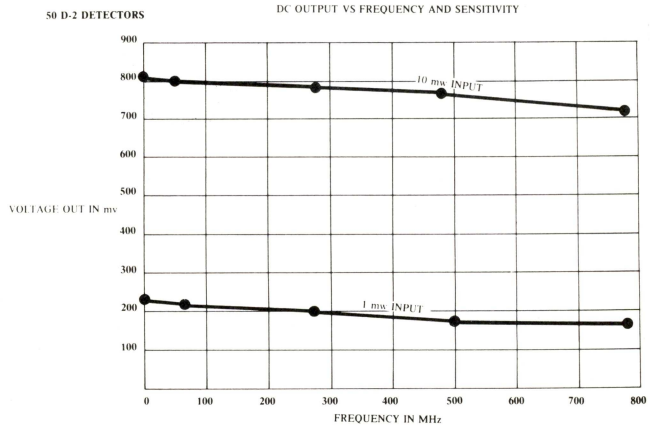


BNC







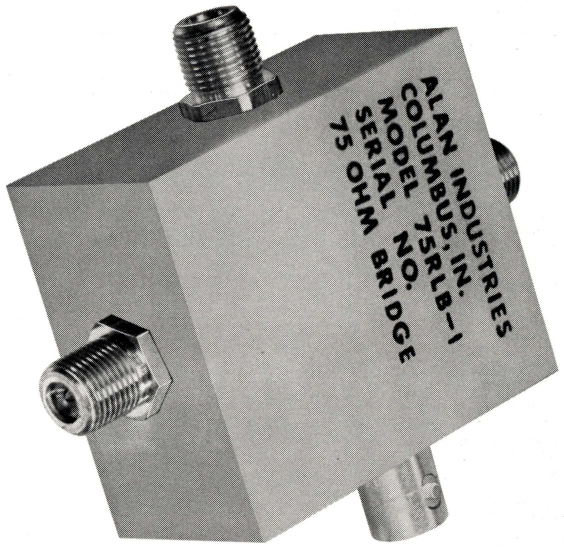


TO ORDER SPECIFY: Impedance, Category (D), Frequency Response, and Connectors. For example to order a 50 Ohm unit with frequency response of ±1.50B with BNC Connectors, order Model 50D-2B.

RLB SERIES

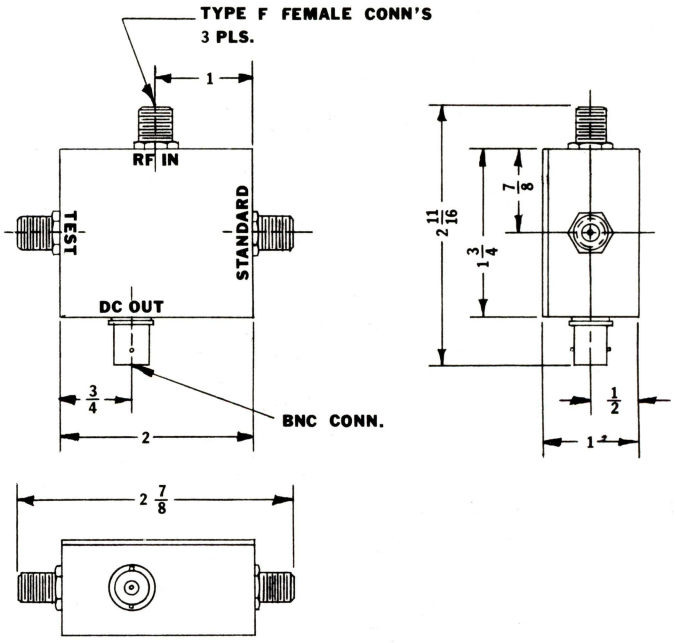
"RLB" SERIES:

The RLB, Return Loss Bridge, provides an accurate measurement of VSWR, return loss, versus frequency when used with an oscilloscope and a sweep generator. The RLB is an excellent choice for production testing of coaxial components such as attenuators, amplifiers, filters and terminations.



ELECTRICAL SPECIFICATIONS:

MODEL	**50RLB-1**	**75RLB-1**
FREQUENCY RANGE:	DC-500 MHz	DC-500 MHz
IMPEDANCE:	50 Ohms	75 Ohms
RETURN LOSS:	45 dB Minimum	45 dB Minimum
OUTPUT POLARITY:	Negative	Negative
CONNECTORS:		
RF - INPUT	BNC or TNC	"F" or BNC
Z_1 - Z_2	BNC or TNC	"F" or BNC
DC - OUTPUT	BNC (standard)	BNC (standard)
SENSITIVITY:		
1.1:1 VSWR:	2 mv	2 mv
1.2:1 VSWR:	8 mv	8 mv
1.5:1 VSWR:	30 mv	30 mv
2.01:1 VSWR:	65 mv	65 mv
PRICE:	$80.00	$80.00

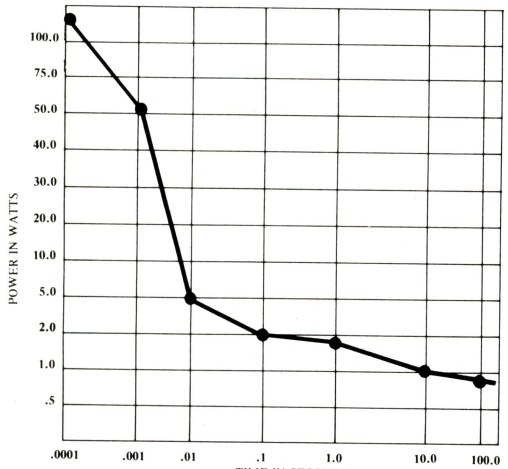


TO ORDER SPECIFY: Impedance, Category (RLB) and Connectors. For example to order a 75 Ohm unit with F connectors, order Model 75RLB-1 F.

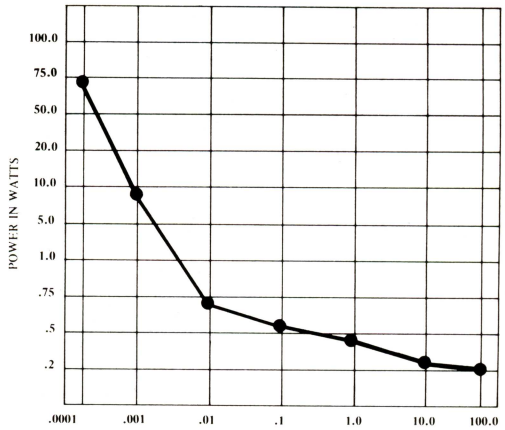
RF FUSE: CIRCUIT PROTECTORS

"FL" SERIES:

The FL Series is an RF Fuse which prevents accidental burnout of attenuators and other devices sensitive to DC and RF Power by introducing a fuse link element between a signal source and a transceiver. Several watts of DC and RF Power could otherwise be applied to the signal source should the transceiver accidentally be switched to "Transmit." Fuses with different frequency ranges and breakdown points are available and the fuse link element is "Field Repairable." Connector options are BNC, TNC and N for the 50 Ohms version while Type F, N, TNC and BNC are available for the 75 Ohm unit. One fuse holder and 10 extra fuse elements are provided.

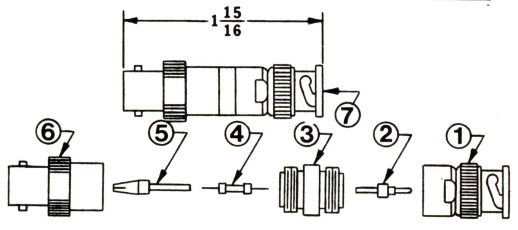


GRAPH DOES NOT HOLD TRUE
EXCEPT WITH MATCHED 50 Ohm IMPEDANCES



GRAPH DOES NOT HOLD TRUE
EXCEPT WITH MATCHED 50 Ohm IMPEDANCES

MODEL NUMBER	50FL16	50FL8	75FL16
IMPEDANCE	50 OHMS	50 OHMS	75 OHMS
FREQUENCY RANGE	DC-500 MHz	DC-1300 MHz	DC-1000 MHz
VSWR (MAX.)	1.2:1	1.3:1	1.2:1
BREAKDOWN POINT	+23 dBm	+29 dBm	4.5V into 75 OHMS
INSERTION LOSS (±0.1 dB) @ 10 MHz	1.00 dB	0.30 dB	0.50 dB
@ 100 MHz		0.40 dB	0.75 dB
@ 500 MHz	1.70 dB	0.70 dB	1.20 dB
@ 800 MHz		0.90 dB	1.50 dB
@ 1000 MHz		0.90 dB	2.00 dB
@ 1300 MHz		1.40 dB	
CONNECTORS	BNC, TNC, & N	BNC, TNC, & N	BNC, TNC, N, & F
PRICE	$40.00	$40.00	$40.00
FUSE ELEMENTS (pkg of 10 spares)	Price CC-002 Model $17.50	Model CC-001 Price $17.50	Model CC-003 Price $17.50



PARTS LIST
1. BNC MALE CONNECTOR
2. BNC MALE PIN & CONTACT
3. COUPLING
4. FUSE ELEMENT
5. BNC FEMALE PIN & CONTACT
6. BNC FEMALE CONNECTOR
7. ASSEMBLED UNIT

TO ORDER SPECIFY: Impedance, Category (FL), Breakdown Point, and type of Connectors. For example to order a 50 Ohm unit with a breakdown point of ±23DBM, BNC Connectors, order Model 50FL16B.

AUTOMATIC MEASURING SYSTEMS

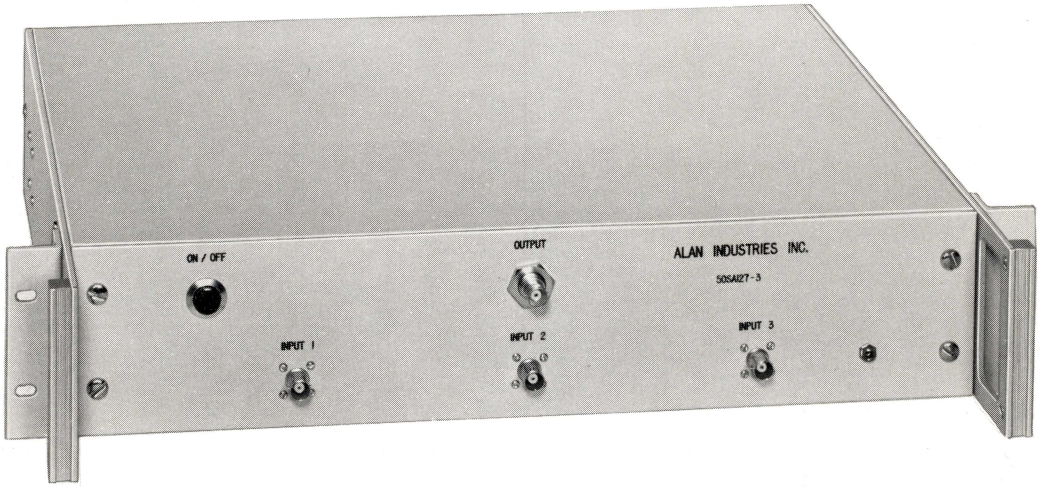
"SA" SERIES:

New

The "SA" series combines Coaxial Switches with Programmable Attenuators designed for use with either a computer or a desk top calculator. Programming for automatic testing or other applications is accomplished using a twenty-six pin connector.

Alan believes these unique components satisfy the requirements generated by many system engineers and may be adapted to a wide range of uses. The "SA" series would enable a signal inserted into several different points as another bay is being unloaded and reloaded. After testing, the signal is switched to the second test bay while the first test bay is being unloaded and reloaded.

Alan has provided units with three inputs and one attenuated output which allows the programming of any one of three signals as well as the output signal. Similar units have only one input and twenty attenuated outputs. For pricing, please contact the factory.



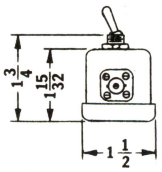
HIGH POWER TOGGLE SWITCH ATTENUATORS

"HT" SERIES:

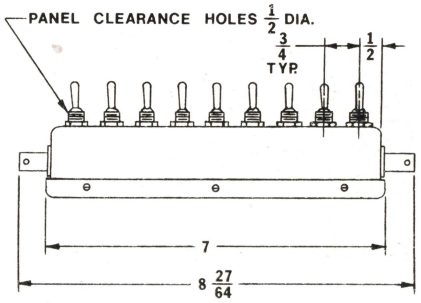
New

The "HT" Series feature a 10 watt Toggle Switch Attenuator in 50 Ohm impedance with steps of 0 to 82.5 dB in 0.5 dB steps or 0 to 42 dB in 1 dB steps. To insure reliability and longer life only heavy duty Toggle Switches are used.

MODEL		**50HT42**	**50HT82.5**
ATTENUATION RANGE:		0-42 in 1 dB steps	0-82.5 in .5 dB steps
ATTENUATION STEPS:		1, 2, 3, 6, 10 & 20 dB	0.5, 1, 2, 3, 6, 10, 20, 20, & 20 dB
IMPEDANCE:		50 Ohms	50 Ohms
FREQUENCY RANGE:		DC-700 MHz	DC-250 MHz
ACCURACY:	DC-250 MHz	± .2 or 2%	± .3 or 2%
	250-500 MHz	± .3 or 2%	
	500-700 MHz	± .4 or 2%	
INSERTION LOSS:		1.6 dB Maximum	1.2 dB Maximum
VSWR:	DC-250 MHz	1.3:1	1.3:1
	250-700 MHz	1.4:1	
POWER:	Average	10 watts	10 watts
	Peak	5000 watts	5000 watts
CONNECTORS:		BNC, TNC, N or SMA	BNC, TNC, N, or SMA
PRICE:		$185.00	$215.00



SHOWN WITH 'BNC' CONN'S.



VOLTAGE AND POWER MONITORS

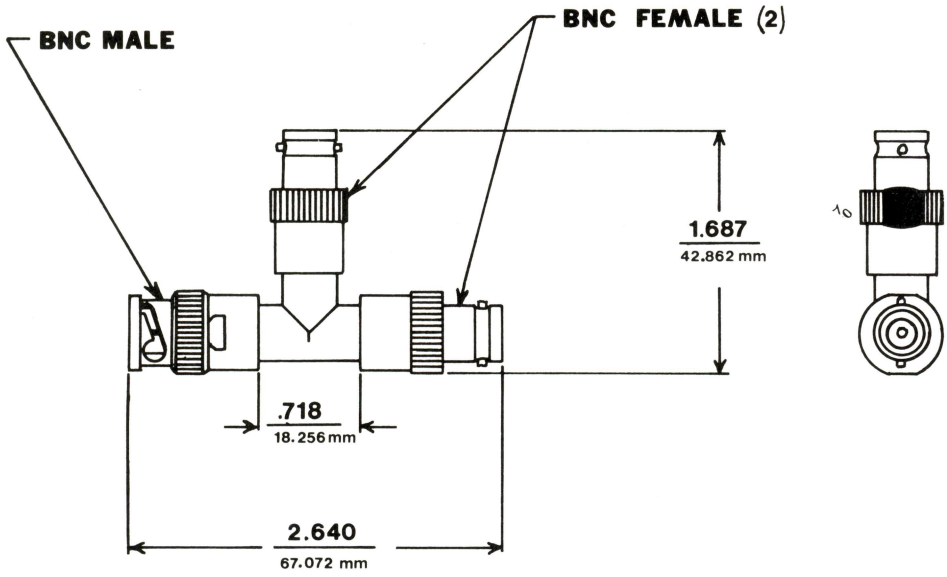
New

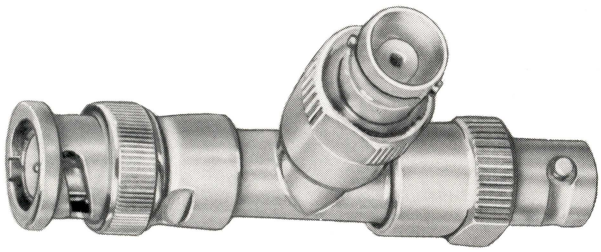
"VM" SERIES:

Alan's 50VM1 is a Voltage Monitor designed to observe RF Voltage by affording the opportunity for the signal to pass between two connectors while a matched diode samples only a segment of the RF for quality and fidelity. Using the 50VM1 can result in substantial improvement in flatness when voltage variation may be caused by load impedance changes or VSWR when determining insertion loss or gain over a wide range of frequencies.

"PM" SERIES:

The Power Monitor, Alan's 50PM1, is an RF Detector designed for use with Sweep/Signal Generator's having external ALC capabilities. Placing the 50PM1 at the device under test will give a constant electrical potential not affected by cable discontinuties, insertion losses, or load impedance changes. Significant improvement in flatness is achieved by using the Power Monitor in cases where voltage variation is caused by load impedance changes or VSWR. To achieve low reflection, the 50PM1, includes a 50 Ohm resistor to establish a 50 Ohm source impedance.





ELECTRICAL SPECIFICATIONS:

MODEL	50VM1	50PM1
FREQUENCY RANGE:	500 kHz-1000 MHz	500 kHz-1000 MHz
IMPEDANCE:	50 Ohms	50 Ohms
INSERTION LOSS:	.5 dB maximum	approximately 3 dB
MAXIMUM VSWR:	1.2:1 with ALC Closed	1.25:1
DC OUTPUT FLATNESS:	± .7 dB	± .7 dB
DC OUTPUT POLARITY:	Negative	Negative or Positive (Please Specify)
MAXIMUM INPUT POWER:	200 mW	200 mW
RF CONNECTORS [1]:	BNC, TNC, or N	BNC, TNC, or N
DC CONNECTORS:	BNC Female	BNC Female
PRICE:	$80	$90

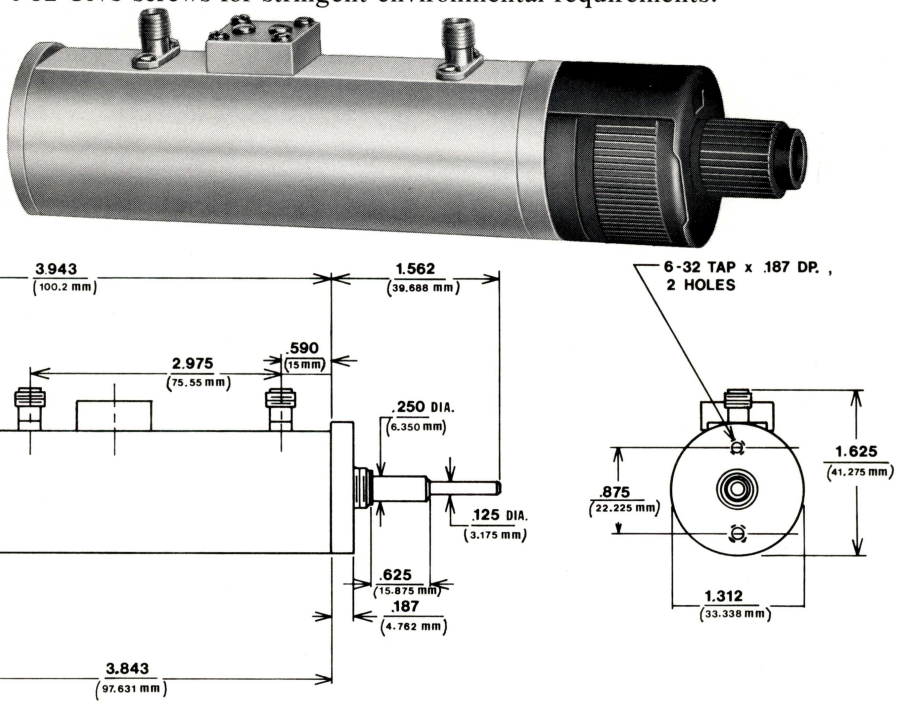
TO ORDER SPECIFY: Impedance, Category (VM) or (PM), and Type of Connectors. For example to order a 50 Ohm Voltage Monitor with BNC RF Connectors, order Model 50VM1B.

MINIATURE DUAL CONCENTRIC ATTENUATORS

"SDV" SERIES:

New

The "SDV" series combines the performance characteristics of the large dual concentric models with the unique physical dimensions of the subminiature attenuators. To insure stability this attenuator is constructed using 1% precision film resistors designed in pi networks and will exhibit a long term stability of better than 0.1 dB per year when operated within the rated power and temperature region. Total attenuation ranges of 59, 69, 79, 89, 99, and 109 dB are available in 50 Ohm impedance covering the frequency range of DC-1GHz. Each unit is supplied with index stops, knobs, and provisions to panel mount the device with two 6-32 UNC screws for stringent environmental requirements.



ELECTRICAL SPECIFICATIONS:

MODEL		50 SDV59	50SDV69	50SDV79	50SDV89	50SDV99	50SDV109
ATTENUATION RANGE		0-59 dB in 1 dB STEPS	0-69 dB in 1 dB STEPS	0-79 dB in 1 dB STEPS	0-89 dB in 1 dB STEPS	0-99 dB in 1 dB STEPS	0-109 dB in 1 dB STEPS
FREQUENCY RANGE		DC-1 GHz	DC-1 GHz	DC-1 GHz	DC-1 GHz	DC-1 GHz	DC-1 GHz
IMPEDANCE		50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS
ACCURACY (dB)	DC-30 MHz	±.2 dB	±.2 dB	±.2 dB	±.3 dB	±.3 dB	± .3 dB
	30 MHz to 500 MHz	±.2 dB,0-9 ±.4 dB,10-59	±.2 dB,0-9 ±.5 dB,10-69	±.2 dB,0-9 ±.5 dB,10-79	±.2 dB,0-9 ±.6 dB,10-89	±.2 dB0-9 ±.8 dB,10-99	±.2 dB,0-9 ±.8 dB,10-109
	.5 GHz-1 GHz	±.3 dB,0-9 ±.75 dB,10-59	±.3 dB,0-9 ±.8 dB,10-69	±.3 dB,0-9 ±1 dB,10-79	±.3 dB,0-9 ±1 dB,10-89	±.2 dB,0-9 ±1.5 dB,10-99	±.3 dB,0-9 ±2.0 dB,10-109
MAXIMUM VSWR	AT 1 GHz	1.3:1	1.3:1	1.3:1	1.3:1	1.3:1	1.3:1
MAXIMUM INSERTION LOSS AT MAXIMUM FREQUENCY		.4	.4	.4	.4	.4	.4
POWER AVERAGE		1 WATT	1 WATT	1 WATT	1 WATT	1 WATT	1 WATT
POWER PEAK		1000 WATT	1000 WATT	1000 WATT	1000 WATT	1000 WATT	1000 WATT
KNOB INDEXNG		30°	30°	30°	30°	30°	30°
TEMPERATURE RANGE		-20° C TO +85° C					
CONNECTORS		SMA FEMALE PER MIL-C-39012					
PRICE		$185	$195	$205	$215	$225	$235

TO ORDER SPECIFY: Impedance, Category (SDV), and Total Attenuation Range. For example to order a 50 Ohm unit with total attenuation of 79 dB, order 50SDV79. All units are supplied with SMA connectors meeting MIL-C-39012.

LABORATORY ATTENUATOR

New

"LA" SERIES:

The "LA" Series is a Bench-Top Step Attenuator tailored for wide-range measurements such as signal-to-noise ratio, receiver sensitivity and cross modulation for applications with the Television, CATV, Telephone and Radio Industries.

The Attenuators are mounted in a durable thick high-impact enclosure that can withstand the rigors of daily use in the lab or in the field. Each bottom corner features rubber feed-through feet for non-skid tabletop operation with the carrying handle doubling as a tabletop support to adjust viewing angles.

This series feature direct reading dials to guarantee accurate readings at a glance. Total attenuation ranges of 10.9, 79, 89, 99 and 109 dB are available with 50 Ohms Impedance.

ELECTRICAL SPECIFICATIONS:

MODEL		50LA10.9	50LA79	50LA89	50LA99	50LA109
ATTENUATION RANGE		0-10.9 dB 0.1 dB STEPS	0-79 dB 1.0 dB STEPS	0-89 dB 1.0 dB STEPS	0-99 dB 1.0 dB STEPS	0-109 dB 1.0 dB STEPS
FREQUENCY RANGE		DC-.5 GHz	DC-1.5 GHz	DC-1.0 GHz	DC-1.0 GHz	DC-1.0 GHz
IMPEDANCE		50 OHMS	50 OHMS	50 OHMS	50 OHMS	50 OHMS
ACCURACY	DC-30MHz	± .02 0-.9 ± .08 1-10.9	± .1 0-9 ± .2 10-79	± .1 0-9 ± .2 10-89	± .1 0-9 ± .2 10-99	± 0-9 ± .2 10-109
	30-.5GHz	± .03 0-.9 ± .15 1-10.9	± .2 0-9 ± .7 10-79	± .2 0-9 ± .7 10-89	± .2 0-9 ± .7 10-99	± .2 0-9 ± .7 10-109
	.5GHz-1GHz		± .3 0-9 ± 1.0 10-79	± .3 0-9 ± 1.0 10-89	± .3 0-9 ± 1.5 10-99	± .3 0-9 ± 2.0 10-109
	1-1.5GHz		± .4 0-9 ± 1.5 10-79			
MAXIMUM VSWR		1.2:1	1.4:1	1.3:1	1.3:1	1.3:1
MAXIMUM INSERTION LOSS		.8 dB	.5 dB	.5 dB	.5 dB	.5 dB
POWER	AVERAGE	1 WATT	.5 WATT	.5 WATT	.5 WATT	.5 WATT
	PEAK	1000 WATT	1000 WATT	1000 WATT	1000 WATT	1000 WATT
CONNECTORS		BNC, SMA, "N", or SMA optional	BNC, SMA, "N", or SMA optional	BNC, SMA, "N", or SMA optional	BNC, SMA, "N", or SMA optional	BNC, SMA, "N", or SMA optional
WEIGHT		3.5 lbs. approx.	3.5 lbs. approx.	3.5 lbs. approx.	3.5 lbs. approx.	3.5 lbs. approx.
DIMENSIONS		3"Hx5"Dx7"W	3"Hx5"Dx7"W	3"Hx5"Dx7"H	3"Hx5"Dx7"W	3"Hx5"Dx7"W
PRICE		$245	$245	$260	$270	$285

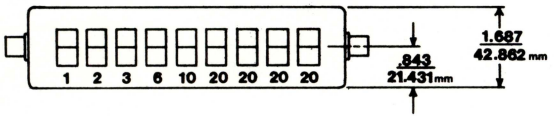
TO ORDER SPECIFY: Impedance, Category (LA), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 99 dB with BNC connectors, order Model 50LA99B.

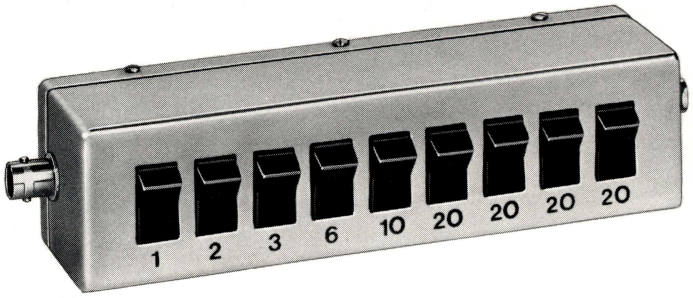
ROCKER SWITCH ATTENUATOR

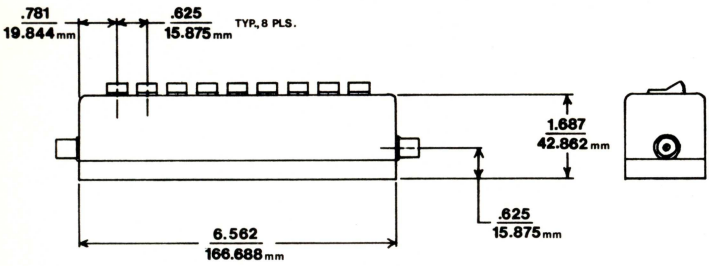
New

"RS" SERIES:

The "RS" series of Rocker Switch Attenuators are suitable for production line applications where rapid and numerous changes in attenuation are necessary. The user may vary attenuation with ease and speed, accurately, with finger tip control. Standard models are 0-102 dB in 1 dB steps or 0-82.5 dB in .5 dB steps operating over the frequency range of DC-500 MHz in either 50 or 75 Ohms characteristic impedance. Special models may be ordered for unique applications requiring other attenuation values.







ELECTRICAL SPECIFICATIONS:

MODEL		**50RS82.5**	**50RS102**	**75RS82.5**	**75RS102**
FREQUENCY RANGE:		DC-500 MHz	DC-500 MHz	DC-500 MHz	DC-500 MHz
IMPEDANCE:		50 Ohms	50 Ohms	75 Ohms	75 Ohms
ATTENUATION:		0-82.5 dB in 0.5 dB steps; steps of 0.5, 1, 2, 3, 6, 10, 20, 20 and 20 dB	0-102 dB in 1 dB steps; steps of 1, 2, 3, 6, 10, 20, 20, 20 and 20 dB	0-82.5 dB in 0.5 dB steps; steps of 0.5, 1, 2, 3, 6, 10, 20, 20 and 20 dB	0-102 dB in 1 dB steps; steps of 1, 2, 3, 6, 10, 20, 20, 20 and 20 dB
VSWR:		DC-250 MHz 1.3:1 Maximum 250-500 MHz 1.4:1 Maximum	DC-250 MHz 1.3:1 Maximum 250-500 MHz 1.4:1 Maximum	DC-250 MHz 1.3:1 Maximum 250-500 MHz 1.4:1 Maximum	DC-250 MHz 1.3:1 Maximum 250-500 MHz 1.4:1 Maximum
ACCURACY:	Per Section				
	DC-30 MHz	± .1 dB	± .1 dB	± .1 dB	± .1 dB
	30-250 MHz	± .2 dB	± .2 dB	± .2 dB	± .2 dB
	250-500 MHz	± .3 dB	± .3 dB	± .3 dB	± .3 dB
	All Sections				
	DC-30 MHz	± .5 dB	± .5 dB	± .5 dB	± .5 dB
	30-250 MHz	± 1 dB	± 1 dB	± 1 dB	± 1 dB
	250-500 MHz	± 2 dB	± 2 dB	± 2 dB	± 2 dB
INSERTION LOSS:		1.5 Maximum	1.5 Maximum	1.5 Maximum	1.5 Maximum
POWER:	AVERAGE	.5 watt	.5 watt	.5 watt	.5 watt
	PEAK	1000 watt	1000 watt	1000 watt	1000 watt
CONNECTORS:		BNC, TNC	BNC, TNC	BNC, TNC or F	BNC, TNC or F
PRICE:		$90	$90	$90	$90

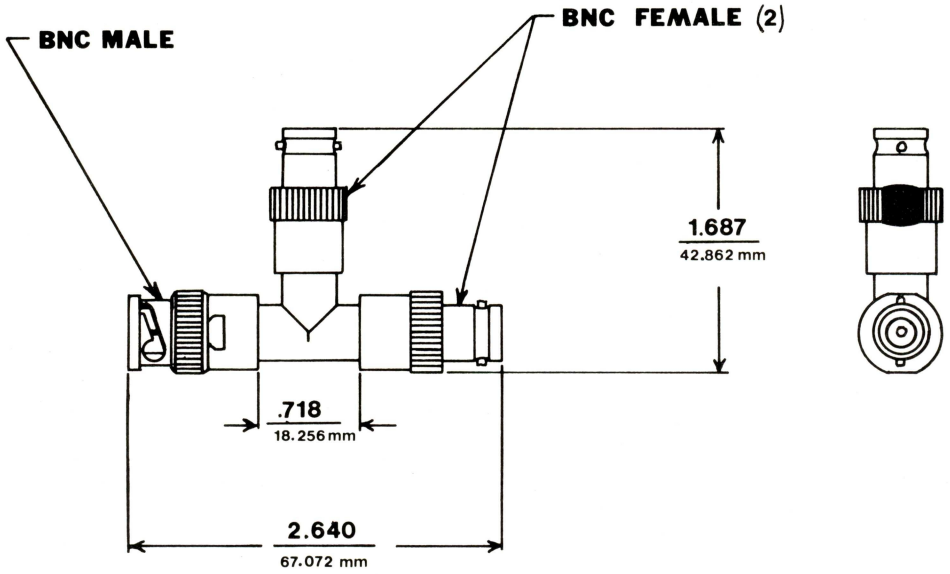
TO ORDER SPECIFY: Impedance, Category (RS), Total Attenuation Range, and Connectors. For example to order a 50 Ohm unit with total attenuation of 102 dB with BNC connectors, order Model 50RS102B.

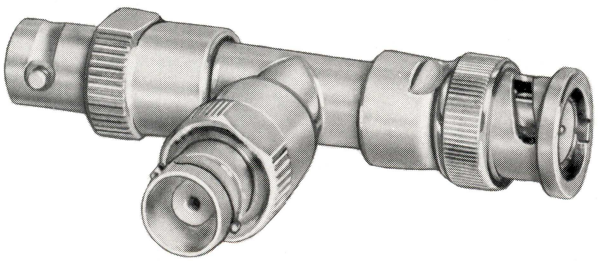
RESISTIVE DIVIDERS

"RD" SERIES:

New

The "RD" series are three arm dissipative dividers covering the frequency range of DC-1500 MHz. This resistive device has minimum insertion loss and maximum load isolation as a result of padding between the output terminals.





FREQUENCY RANGE:	DC-1500 MHz
IMPEDANCE:	50 Ohms
VSWR:	1.3:1 Maximum
INSERTION LOSS [1]:	6 dB
ISOLATION [2]:	6 dB
CONNECTORS:	BNC, TNC or N
POWER:	
AVERAGE:	1 Watt
PEAK:	1000 Watt
TEMPERATURE:	-20° C to +85° C
FINISH:	Silver QQ S-235
PRICE:	$35.00

(1) Input to any one output, nominal.

(2) Any output to any other input.

TO ORDER SPECIFY: Impedance, Category (RD), and type of Connectors. For example to order a 50 Ohm Resistive Divider with BNC connectors, order 50RDB.

EXPLANATION OF CATALOG TERMS AND CHARACTERISTICS

VSWR:

The VSWR or Voltage Standing Wave Ratio is that ratio between the sum and difference of the incident and the reflection voltage waves. ALAN employes the slotted line technique to measure the precise VSWR and the swept technique to guarantee the specification over the entire range of the unit.

INSERTION LOSS:

The difference between the power received at the load before and after the insertion of the attenuator at some point in the line. The ratio is expressed in decibels of the power received at the load before and after insertion of the device.

POWER AVERAGE:

The maximum power that can be dissipated in a unit for a specified period.

TEMPERATURE RANGE:

The temperature or range of temperature at or over which an attenuator is intended to be used, specified by the limits of this interval.

BREAKDOWN POINT:
DETECTORS:

The entire region of the volt-ampere characteristic beyond the initiation of breakdown due to reverse current in semiconductor-diode characteristic curve.

RF FUSES:

The point where sufficient current is attained to cause deterioration of the Fuse element.

SWITCHING SPEED:

The interval between the reference time and the last instant at which the instantaneous integrated-voltage response reaches a stated fraction of its peak value.

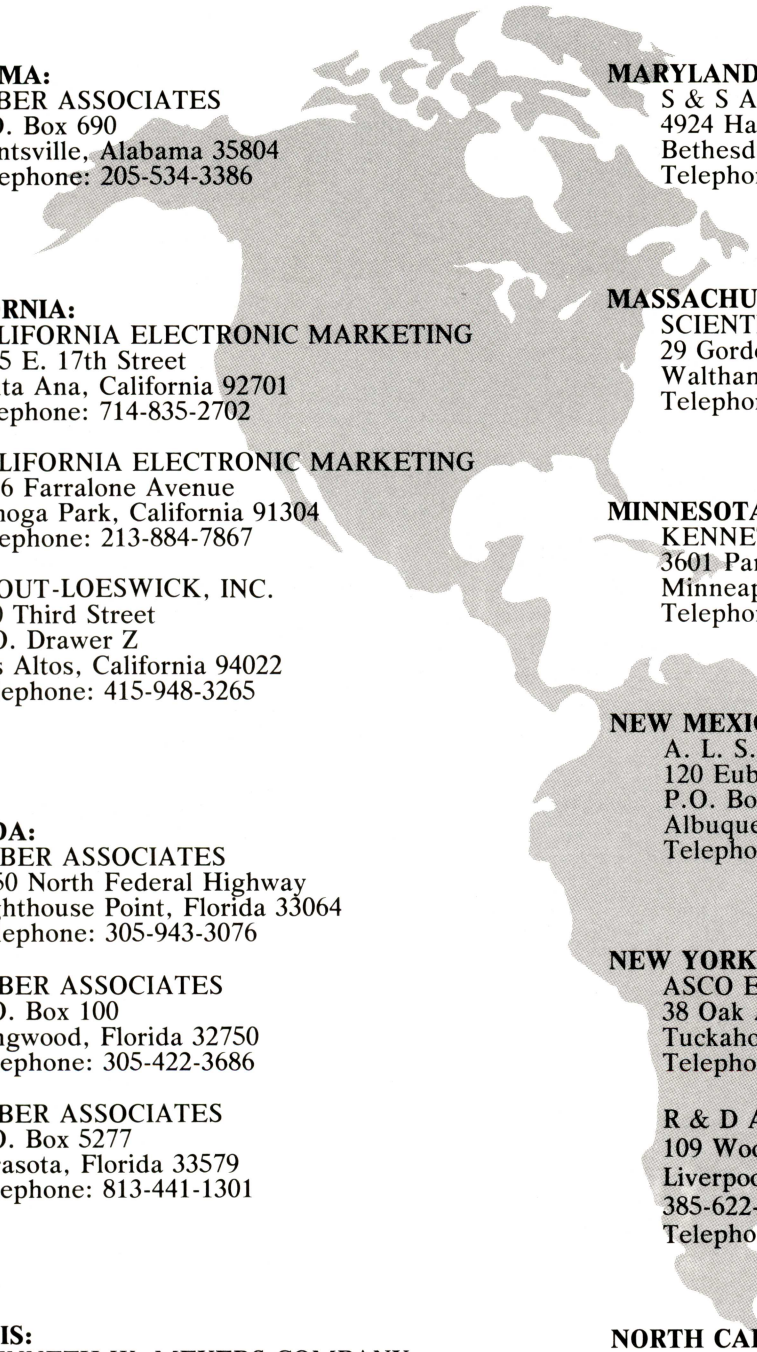
SWITCH LIFE:

The expected number of full excursions over which the device would operate within the limits of the applicable specification. A predetermined life expectancy.

PART NUMBERS FOR ORDERING:

The first two digits denote the Impedance, the alphabetical letter or letters denote the Series or Category, the digits following denote the total Attenuation and the alphabetical letters following indicate the type of connectors desired.

DOMESTIC SALES REPRESENTATIVES



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Santa Ana, California 92701
Telephone: 714-835-2702

CALIFORNIA ELECTRONIC MARKETING
8536 Farralone Avenue
Canoga Park, California 91304
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Longwood, Florida 32750
Telephone: 305-422-3686

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Telex: 781-24420

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